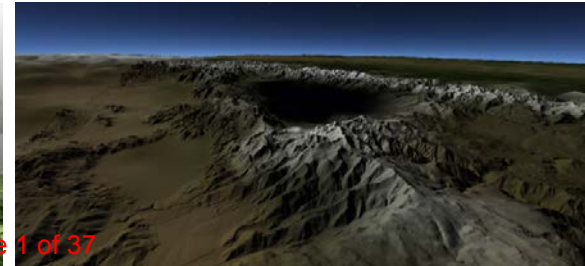
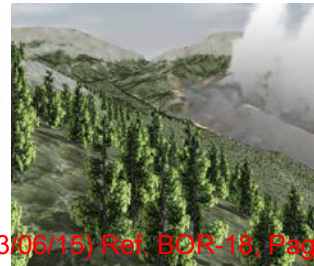
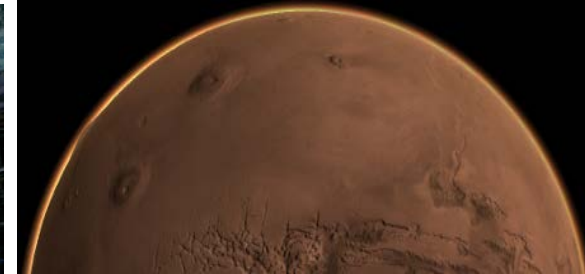




Applied Innovation Center for Advanced Analytics at the Desert Research Institute Update to the NSHE Board of Regents

March 2015



Vision and Mission

Provide business/industry access to expertise in data science, advanced analytics, HPC, data visualization to drive innovation based economic development.



50 Years of Proven Scientific Excellence & Unique Labs & Facilities
*Atmospheric
 Hydrological
 Biological & Geological*



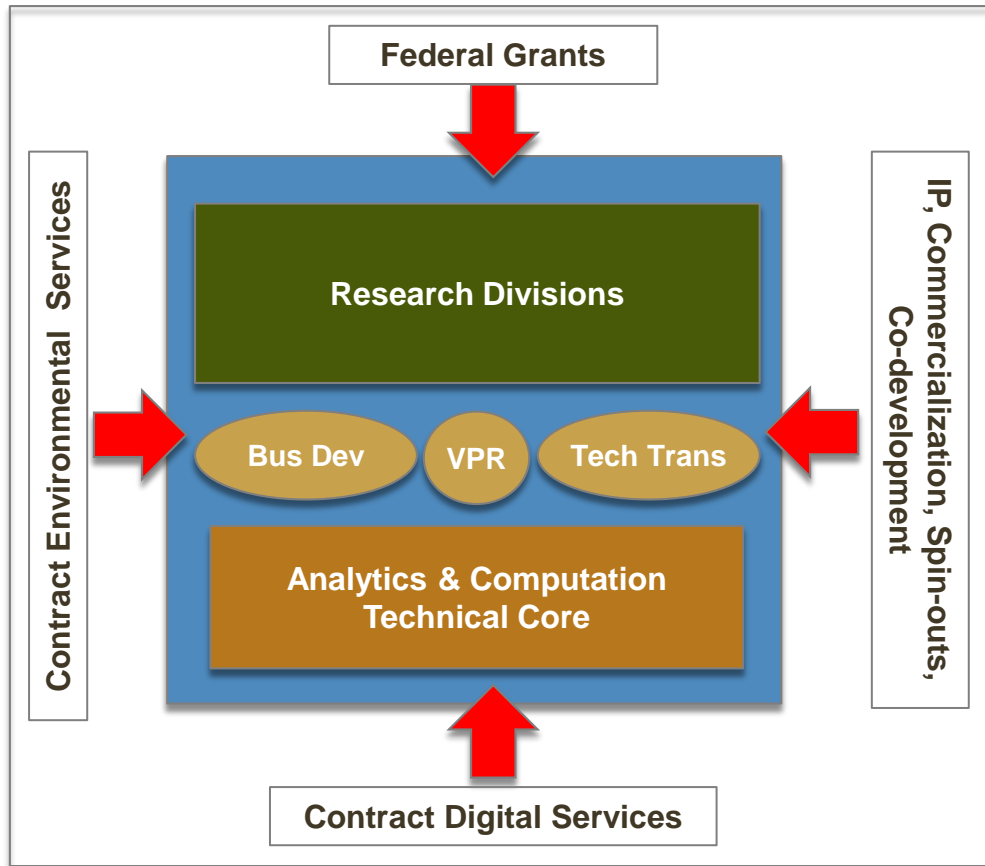
Advanced Digital Infrastructure
 High-Performance Computing Expertise
 Data Science, Analytics, and Visualization



Business & Industry access to intellectual capital and R&D services.

Manufacturing	Mining	Finance
Construction	UAS Systems	Healthcare
Education	Resource Management	Genomics

Revenue Streams



- Contract services
 - AIC Technical Core
 - DRI faculty at-large
- Hosted services
- Grants from strategic proposals
- IP, Commercialization
- Subscription, facilities, systems fees

AIC Phase 1 (*Incubation Phase – 2 years*)

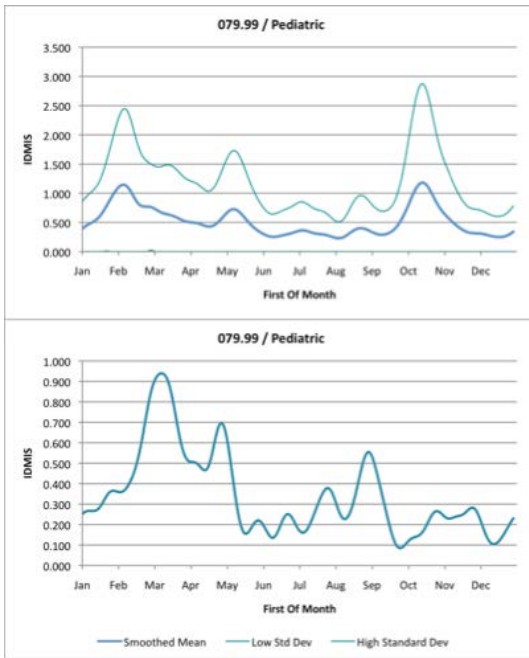
- Hired new technical, business and support staff
- Aggressively developing business opportunities
 - 64 companies and agencies engaged to-date
- Acquired: High-performance computing platform for project execution
- Executed: In excess of \$1.02M in new innovation projects supporting Nevada businesses
- Implementing flexible business model (fee for service, equity stake, royalty stream, etc.)



Partnership Example



- Ascel Bio Corporation provides infectious disease forecasting tools
- AIC is helping Ascel Bio expand their services to the cloud and deliver web-based data dashboards to clients
 - Designing high-performance computing solutions and web interfaces
 - Developing a global disease data dashboard system
 - Integrating DRI climate and meteorological data to increase accuracy and reliability
- Equity stake model



Partnership Example

EMS GENOMICS LLC



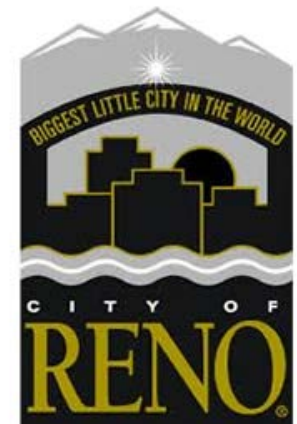
- Spinout from DRI faculty research
- Engineering based approach to drug discovery
 - Rapid identification of anti-cancer compounds
 - Advanced workforce development
- Collaborative partner with Nevada based industry
- Equity stake and fee for service model

Other Partnership Examples

Results to Date



BreezoMeter



AIC Phase 2 (*Growth Phase – 2 years*)

- Align AIC business development efforts with GOED focus on growing and emerging technologies
- Continue to expand staff to include additional analytic/computational expertise
- Aggressively pursue new business opportunities
- Develop technologies for commercialization

Information
Technology

Natural
Resources
Technology

Biotechnology

Clean Energy

Aerospace and
Defense

Update to the Board of Regents on Knowledge Funds

February 10, 2015

Nathan S. Allen – Executive Director



Vision and Mission

The Nevada Center of Excellence in Water is a 501(c)6 non-profit that aims to make Nevada a global water innovation hub and portal for investment by leveraging its leadership and expertise in water.

Board of Directors

- Dr. Steve Wells – President, DRI
- Steve Hill – Director, GOED
- Dave Johnson – Dep. Director, SNWA
- Tom Skancke – COE, LVGEA
- Don Soderberg – Director, DETR

Board of Advisors

- Dr. Tom Piechota – VPR, UNLV
- Dr. Mridul Gautam – VPR, UNR
- Pat Mulroy – DRI & Brookings Inst.
- Ken Ladd – Special Asst. to DRI President
- Dr. Kumud Acharya - DRI



Water Innovation Services Provider for:

Technologies Companies

Management Agencies

Policy Makers

Phase 1 (*Incubation Phase - 2 years*)

The State of Nevada Knowledge Fund provided the initial funding of \$500,000 in June of 2014.

- Initiated 4 research & demonstration projects with companies committed to moving to Nevada, leading to an estimated 12 new high-tech positions
- Appointed an Executive Director, Nathan S. Allen (Previously at University of Arizona) in September 2014; hired Program Coordinator February 2015
- Matching support from state-wide partners included in-kind and an additional \$80,000

Additional Revenue Generated		Number of Businesses Contacted		Businesses relocating to Nevada	
0	\$96,000	100	115	2	4
Target	Status	Target	Status	Target	Status

Support for
NSHE

Phase 1 (*Incubation Phase - 2 years*)

Business Development Activity for NSHE Partners

- Submitted over \$500,000 of new grant proposals with support for faculty, post-docs, and PhD Students for applied research on water innovation and technology
- Expanded partnership with Southern Nevada Water Authority to include software development and testing of Energy and Water Quality Monitoring System by DRI
- Expanding partnership with IBM to include Faculty and Student Support and joint Research and Development activities related to Smart Water and Smart Cities



Phase 1 (*Incubation Phase - 2 years*)

Investment in Big Data computing infrastructure

- 2012- 13 -GOED, DETR, and DRI on behalf of NSHE form interlocal agreement to acquire IBM PureSystems and create a Center of Excellence focused on water sciences, technology, management and workforce development.
- System Provides Advance Data Analytics, Visualization, and Cloud Computing Resources
- Approximately \$300k of the \$500k received by NvCOE from the Knowledge Fund contributed to the purchase of the IBM PureSystem.

Results

- 2012 – 2013 IBM Proof of Concept Platform for PureSystem at DRI
 - Three areas of research development included - numerical weather prediction, fluid dynamic modeling of soils, ESRI Arch GIS Server Pattern
- Enhancement of 6 research areas using Big Data capabilities related to:
 - Atmospheric and Hydrologic Modeling
 - Improved Data Synthesis and Visualization
- IBM System utilized to provide critical services on \$2M research contract at DRI
 - Maximum utilization of system by DRI for 12 months between April 2013 and February 2015

Phase 2 (*Growth Phase - 2 years*)

Next Steps

Establish Las Vegas & Nevada as a Global Hub for Water Innovation and Portal for Investment

- Growing Participation Nationally and Internationally
- Workforce Development and High-Level Job Creation
- Expand Technical, Business Development, and Policy Analysis Services
- Accelerate industry sponsored research for Nevada's academic institutions

One Water Market Approach

**Drinking
Water**

Wastewater

Industrial

Agriculture

Power

Thank you



NAASIC

Nevada Advanced Autonomous Systems Innovation Center



Manos Maragakis, Dean, College of Engineering
Indira Chatterjee, Associate Dean of Engineering

Warren Rapp, Business Director NAASIC

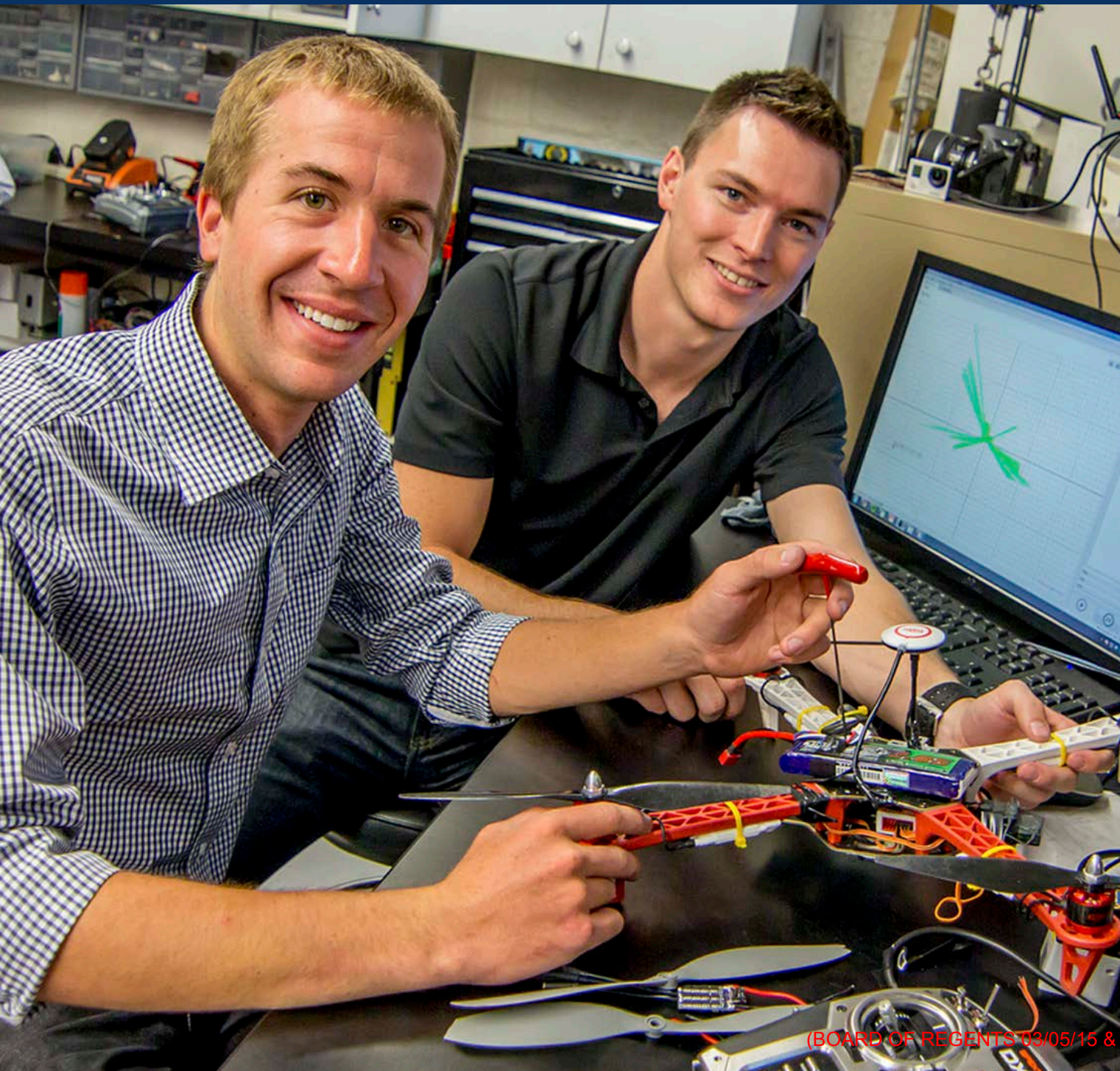


University of Nevada, Reno

A National Tier 1 University

www.unr.edu/naasic

NAASIC Goal



To spur research, innovation, and commercialization of autonomous systems to advance innovation-based economic development in Nevada.



University of Nevada, Reno

NAASIC Mission

Solve emerging complex problems in the development, application, and commercialization of autonomous systems through unique industry-university partnerships, innovation, cooperative research, and entrepreneurship.



University of Nevada, Reno



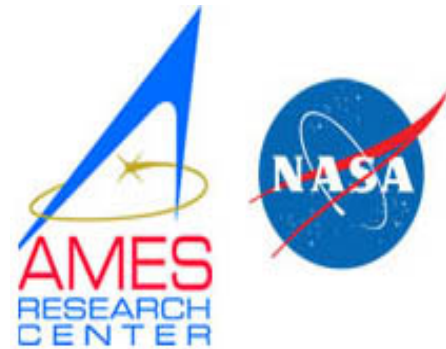
NAASIC Industry Collaborations



Flirtey



Trimble



SW
AERIAL SYSTEMS

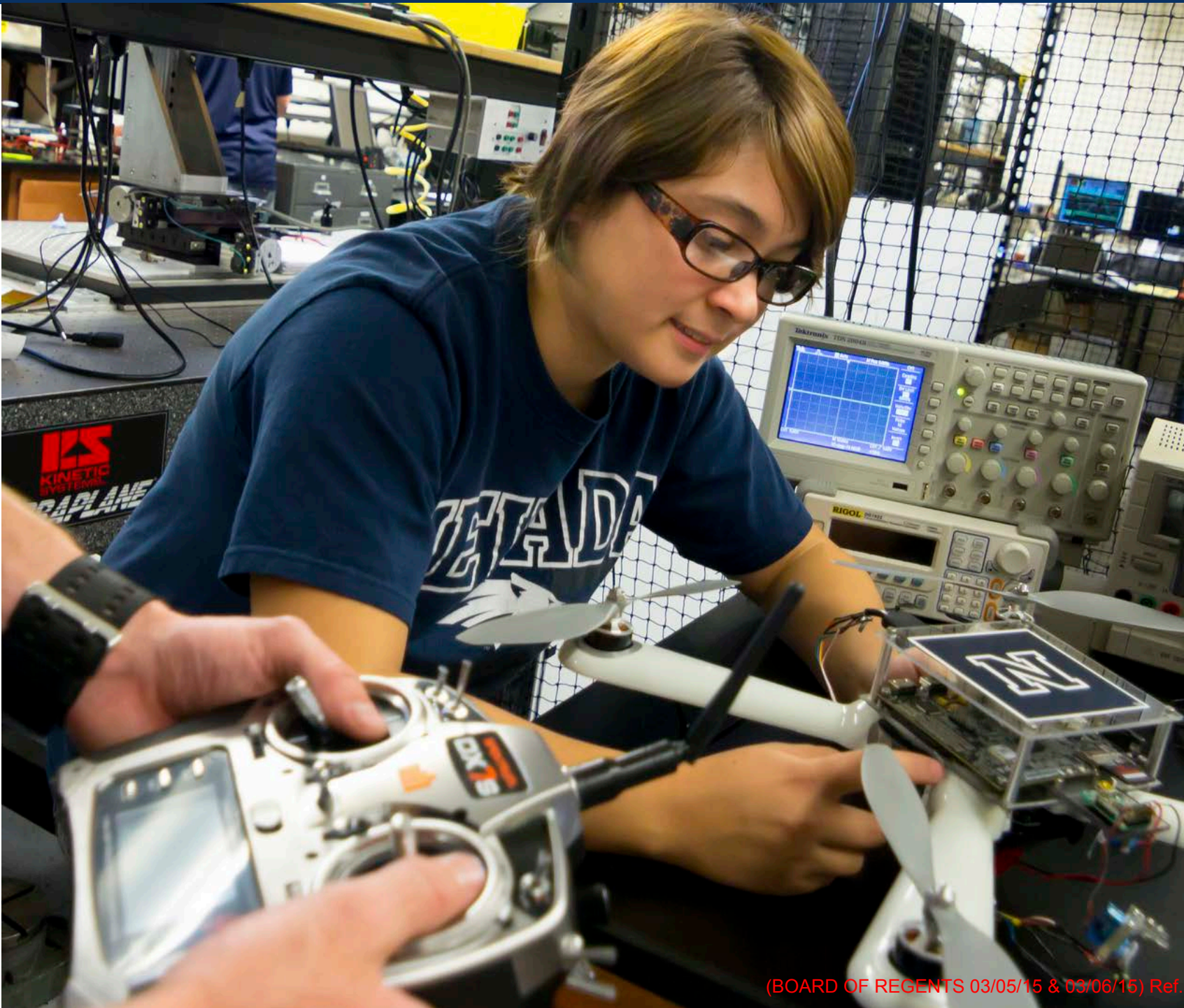


ASHIMA DEVICES



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NAASIC Funded Grants and Contracts



Federal and Industry

- NSF Grant- Renewal – \$1.5 million
- NSF Partnership for Innovation – \$800,000
- Flirtey Technology Pty – \$30,000
- Valkyrie UAV – Proposed \$2 million
- NASA – Two projects – \$67,000
- Cooperative Agreement with National Security Technologies, LLC (NSTec)



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NAASIC Funded Grants and Contracts

Future Grant Submissions

- UAV-Agriculture (UNR/ Idaho State) submit to NSF EPSCoR Feb-2015. \$500,000/year for 4 years
- NASA Ames/UNR Collaboration - NSF Grant for UAV integration issues concerning ground based radar and airspace. \$750,000
- Department of Energy NSTec – UAV-based radiation sensing



University of Nevada, Reno



University of Nevada, Reno Academic Collaborations



University of Nevada, Reno



Creating Skilled Cohort for Nevada's Future



New UAS Minor
Program

Computer Science
Engineering (CSE)

Electrical and Biomedical
Engineering (EBME)

Mechanical Engineering
(ME)



University of Nevada, Reno

NAASIC Economic Impact

New Funding Received:\$400K

Jobs Created:14 Jobs

Companies relocated to Nevada:4

Pending Funding:\$3.5 Million

Total Business Collaborations:10



University of Nevada, Reno



NAASIC Future Operations

- Support industry-sponsored senior capstone design projects.
- Develop and implement center-related education (including K-12 Outreach) and training programs that support the needs of the private sector.
- UAS Jumpstart Summer Camp June 21st -26th.
- Execute the “Kick Start” Program through industry partnerships. Faculty-student teams to exploit relatively mature technologies that can be commercialized.
- Thrust area leaders at the University to represent the core technical areas in UAS. Serve as the technical liaisons between UNR faculty and industry.



University of Nevada, Reno

Nevada Center for Applied Research (NCAR)



University of Nevada, Reno

Long-Term Goal

To build a robust and a sustainable knowledge driven and innovation-based economy in the region and the state of Nevada.



University of Nevada, Reno



Short-Term Goals



- To establish a fully-functional, stand-alone applied research and technology service center that will make Nevada businesses internationally competitive by leveraging the physical and intellectual assets of the University.
- To provide technical and business development expertise to local, regional and state-wide industry; Form University-Industry Integrated Teams



University of Nevada, Reno

QUESTIONS?



University of Nevada, Reno

UNLV

Knowledge Fund Projects Report



Thomas Piechota, Ph.D.

Vice President, Research & Economic Development

Board of Regents Presentation – March 2015

(BOARD OF REGENTS 03/05/15 & 03/06/15) Ref. BOR-18, Page 31 of 37

Knowledge Fund Projects

- Nevada Institute of Personalized Medicine (NIPM) at UNLV
- International Gaming Institute Center for Gaming Innovation (CGI) at UNLV

INTERNATIONAL
GAMING INSTITUTE
WILLIAM F. HARRAH COLLEGE OF HOTEL ADMINISTRATION

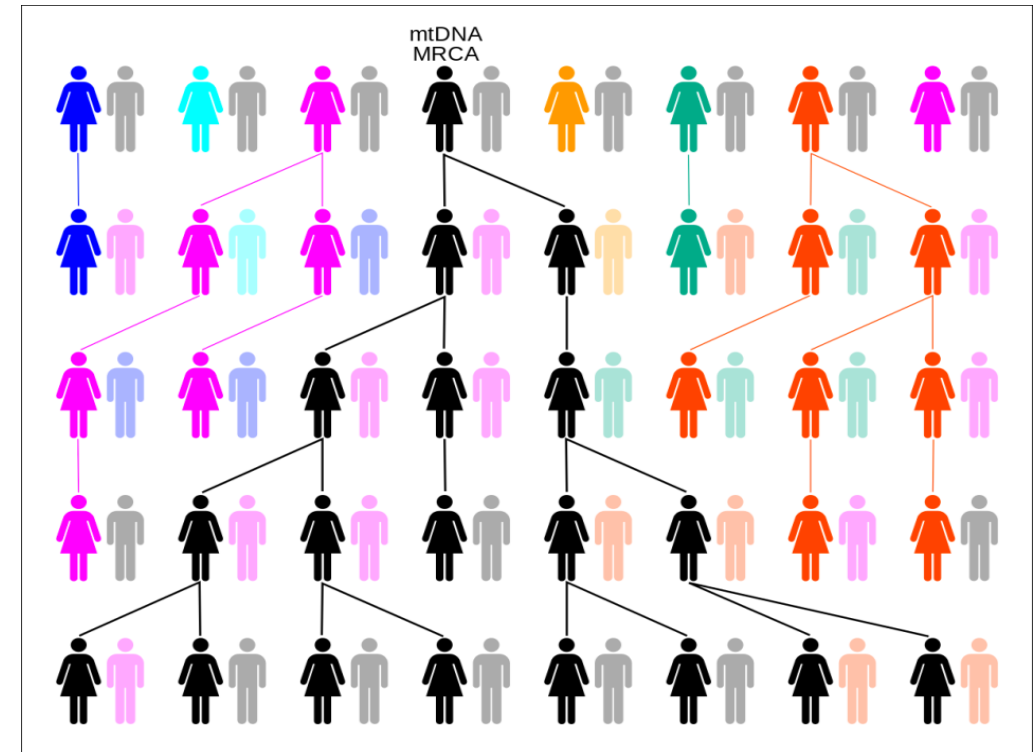
UNLV



UNLV

Nevada Institute of Personalized Medicine

- **Personalized Medicine is customized healthcare based on an individual's DNA**
- **Knowledge Fund grant of \$2.5 million**
- **Workforce development - high paying jobs**
- **Key Highlights Include:**
 - **\$15.9 million** - External Grant Submissions
 - **\$2.4 million** - Revenue from External Grants
 - **10** – Industry Partners (Switch, Elutin, other healthcare and biotech)
 - **4** - Inventions Disclosed
 - **3** - Patent Applications Submitted
 - **1** – Technologies Out-Licensed



Nevada Institute of Personalized Medicine Impact

Internal

- Advantage for UNLV School of Medicine
- Intellectual Capabilities
- Federal Grant Awards for Nevada
- Education/ Degree Programs

External

- Improved health outcomes
- Reduced healthcare costs
- Jobs
 - Clinical Molecular Geneticists
 - Molecular Genetic Pathologists
 - Genetic Counselors
 - Genetic Banking Services
 - Adaptive clinical trials
 - More...
- Personalized Medicine ecosystem
- Beacon for industry start-ups & relocation



International Gaming Institute - Center for Gaming Innovation

- Inventing, Patenting, and Commercializing Casino Games
- **Knowledge Fund** grant of **\$500,000**
- Key Highlights Include:
 - **20** - Patent Applications
 - **4** - Games Licensed for commercialization
 - **3** - Games now, or soon, Available in Nevada Casinos
 - **\$125,000** - Total Revenue from IP Licensing
 - **32** - UNLV Students in CGI Courses



**CBS
NEWS**

UNLV

(BOARD OF REGENTS 03/05/15 & 03/06/15) Ref. BOR-18, Page 35 of 37

UNLV

**INTERNATIONAL
GAMING INSTITUTE**
WILLIAM F. HARRAH COLLEGE OF HOTEL ADMINISTRATION

Center for Gaming Innovation Impact

Internal

- Intellectual Property Creation
- Stronger Industry Partnerships
- Enhanced Research Capabilities



External

- Expansion of Existing Gaming Market
- Attraction of Next Generation Players
- Workforce Training
- Job Placement in Nevada
- Job & Company Retention
- Start-ups based on University Developed Games & Innovations
- Increased Recognition as Intellectual Capital of Gaming Innovation

Initiatives Under Consideration

- Continued Investment in...
 - Nevada Institute of Personalized Medicine
 - Gaming Innovation Center
- Hospitality Solutions Institute
 - Applied research and innovation around industry challenges
- Institute for Data Science
 - Leveraging Switch/Intel/UNLV partnership
 - Applied areas of data analytics, high performance computing

