

IOWA STATE UNIVERSITY

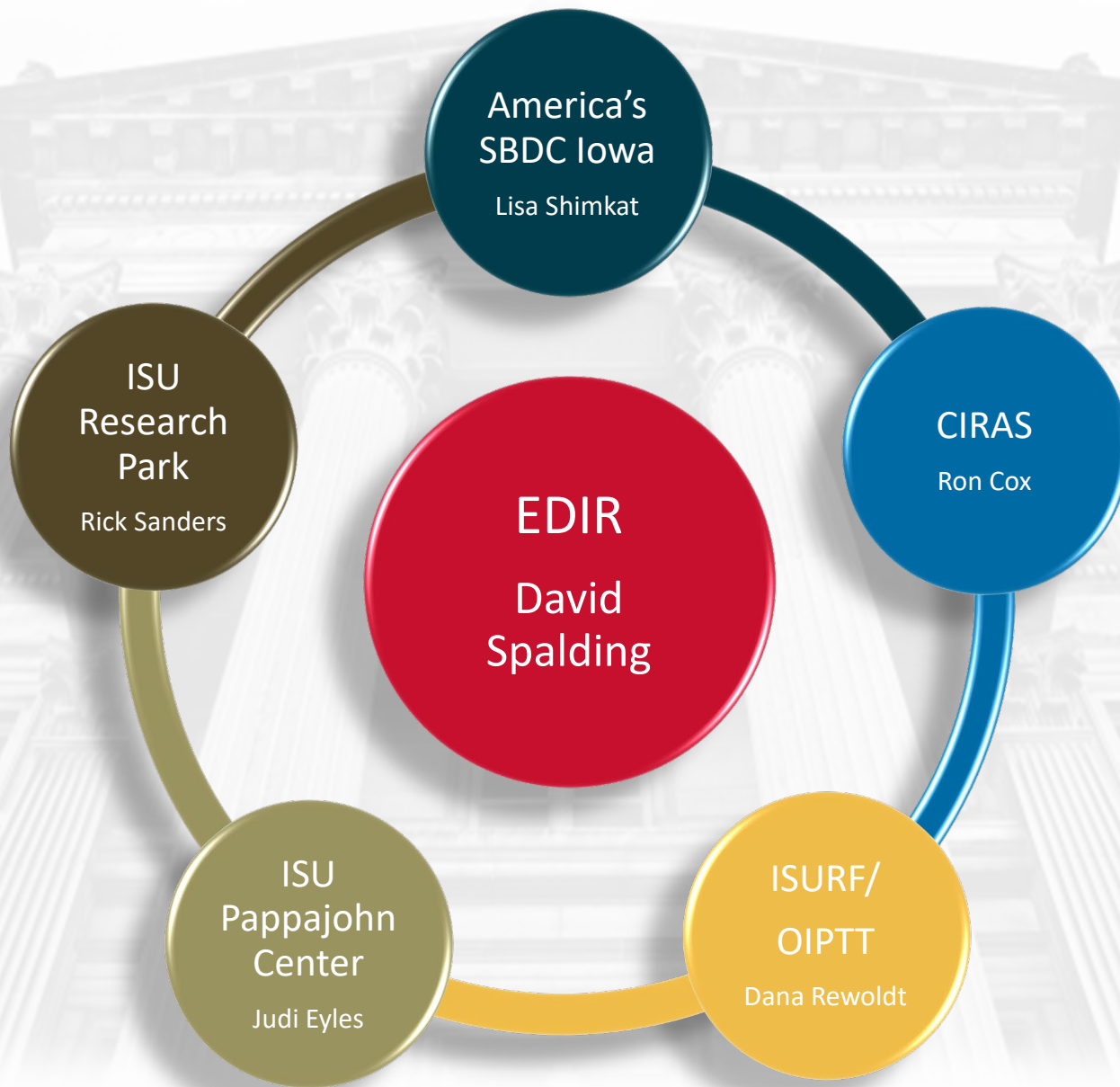
Office of Economic Development and Industry Relations

DRIVING ECONOMIC GROWTH AND OPPORTUNITY IN IOWA

Economic Development Appropriations Subcommittee
February 1, 2022

DAVID SPALDING

*Interim Vice President, Economic Development and Industry Relations
Raisbeck Endowed Dean, Ivy College of Business*



APLU Innovation & Economic Prosperity University Designee

- 2016: ISU received designation
- Eligible for annual IEP Awards for Talent, Innovation, Place; top award in IEP Economic Engagement Connections
- 2017: IEP **Talent Award winner**
- 2018: IEP **Innovation Award finalist**
- 2020: IEP **Innovation Award winner**
- 2021: IEP **Place Award winner**



America's Small Business Development Center Iowa



15 regional centers across the state and serves all 99 Iowa counties

Rural Business Innovators brings tech expertise to rural communities

Helps to start new companies

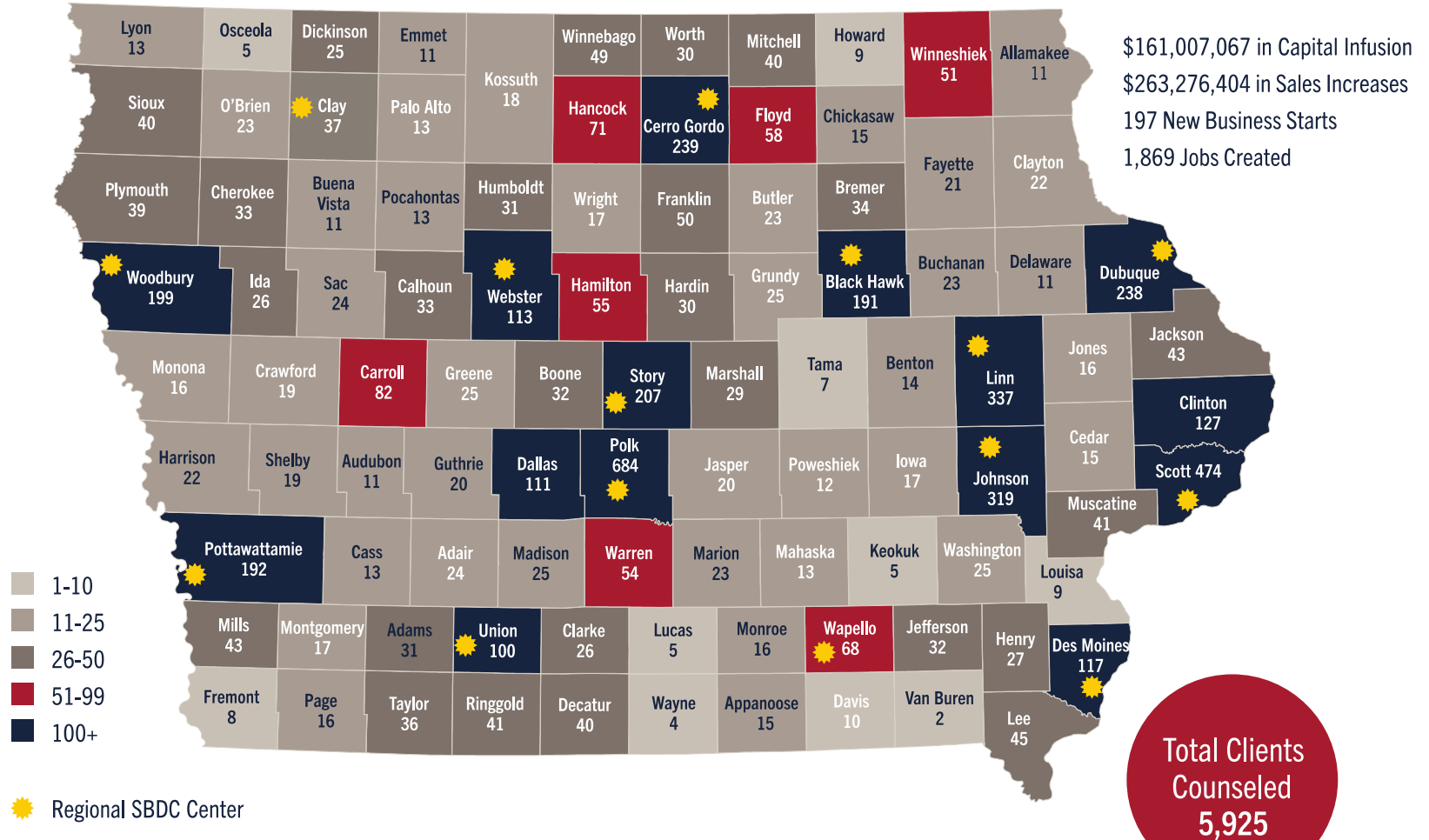
Provides business services/ counsel to existing companies to:

- Solve management problems
- Improve operations
- Seek financing
- Pursue new opportunities

Impact of State Funding (\$836,000)

State funding accounts for nearly 50% of program dollars. Federal funding requires a 1:1 match, half of which must be in cash.

America's SBDC Iowa – Clients Counseled FY20



SBDC Economic Impact FY21

SBDC Clients: Average Monthly Impact Totals



New business starts
each month



>\$5.7M

Raised in capital
each month



186

New jobs created
each month



>\$14.2M

In increased sales
each month

SBDC: 2019 Year in Review



215

New business starts



>\$68M

Raised for
capital funding



2,236

New jobs created

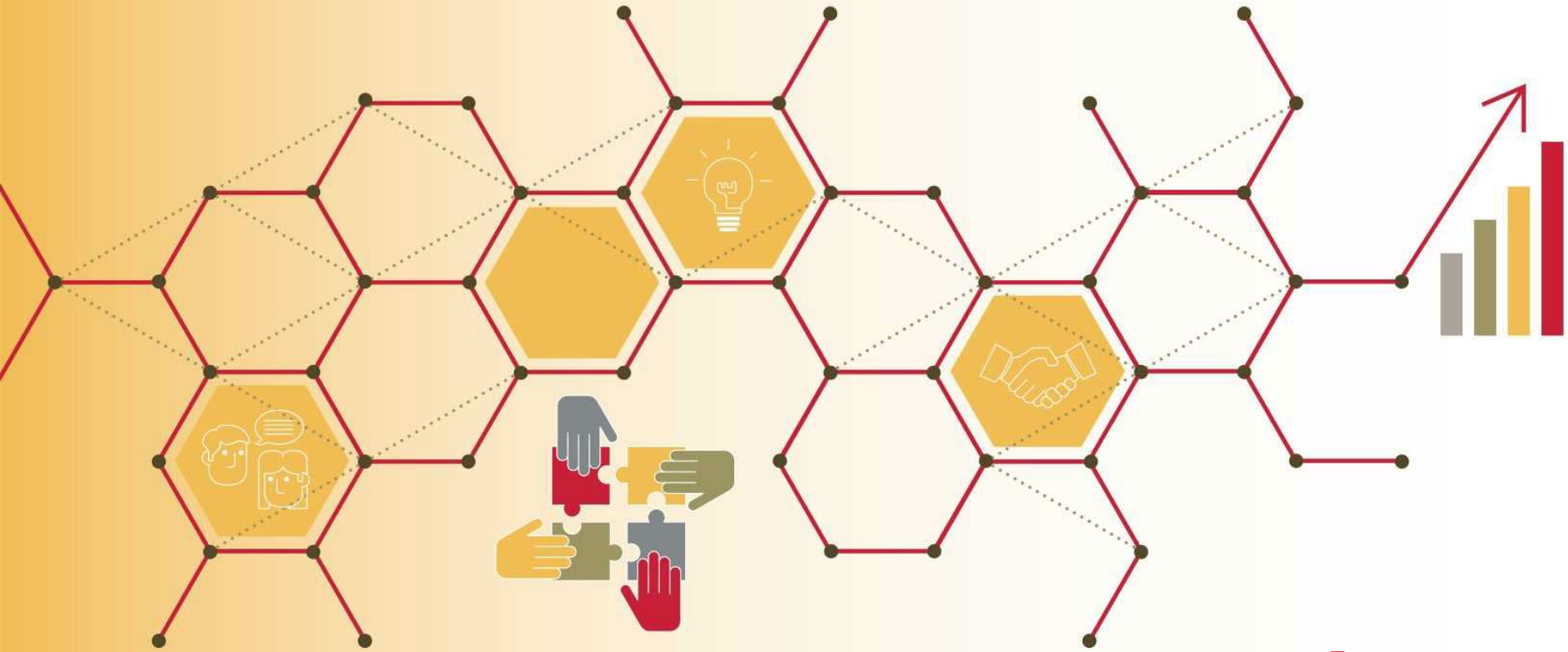


>\$170M

In increased sales

In 2020, **70,000** additional contacts were made during the pandemic through increased targeted outreach.

Center for Industrial Research and Service



Impact of State Funding (\$1,400,000)

State funding is used to provide assistance to manufacturers and small businesses. Every \$1 of state funds is used as match to acquire over \$1 of federal funds to expand services to Iowa companies.

ciras
ENGAGE. EDUCATE. EMBED.

CIRAS – Vast Network



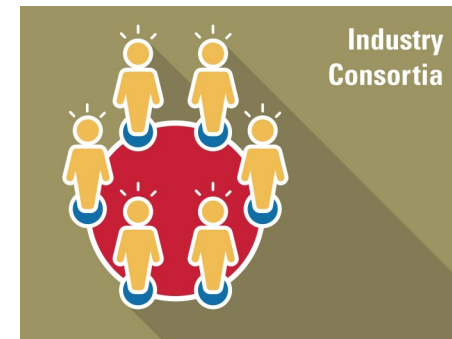
- DoC/NIST Manufacturing Extension Partnership (MEP)
- DLA Procurement Technical Assistance Center (PTAC)
- DoC/EDA University Center Program (EDAUCP)



- Iowa Area Development Group (IADG)
- Iowa Economic Development Authority (IEDA)
- Iowa Association of Business and Industry (ABI)
- Iowa Farm Bureau's Renew Rural Iowa
- Iowa Sustainable Business Forum (ISBF)
- John Pappajohn Entrepreneurial Center
- Northeast Iowa Community College (NICC)



- Center for Crops Utilization Research (CCUR)
- Center for Nondestructive Evaluation (CNDE)
- College of Engineering
- Department of Economics
- Department of Environmental Health and Safety (EHS)
- Engineering Career Services
- Extension and Outreach
- Iowa Grain Quality Initiative (IGQI)
- Meat Science Extension
- Structural Engineering Research Laboratory



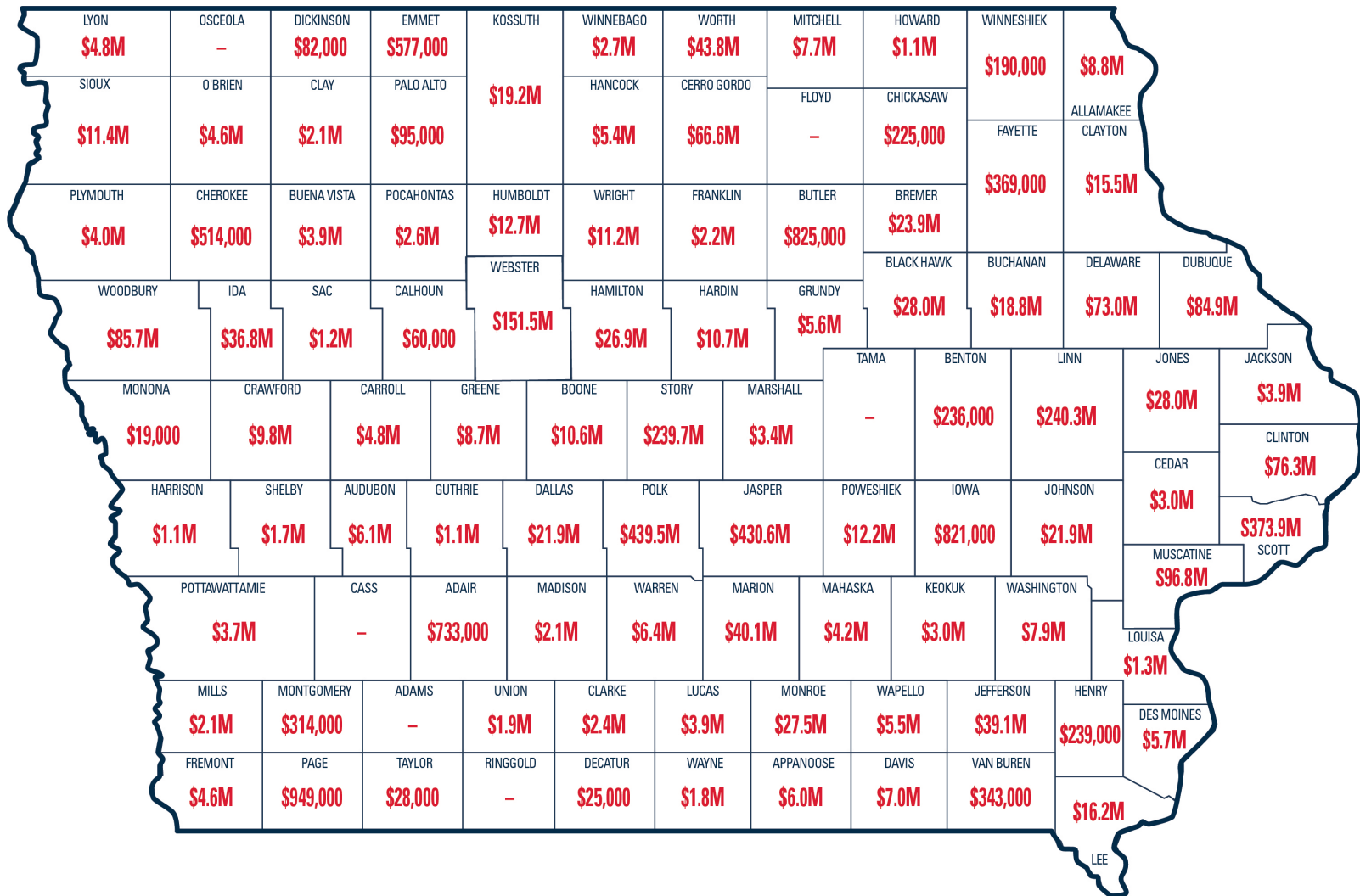
- Iowa Lean Consortium (ILC)
- Polymer and Food Protection Consortium



ciras

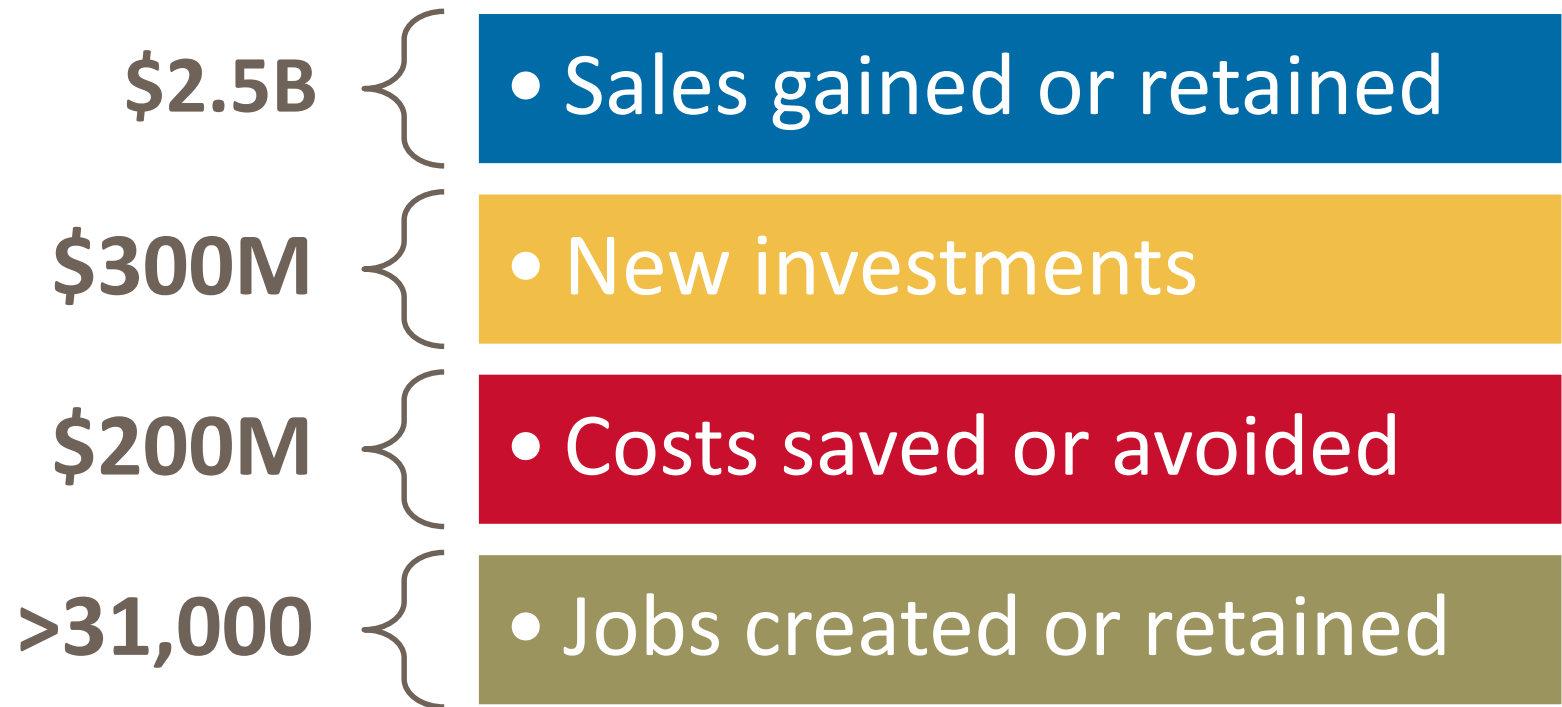
ENGAGE. EDUCATE. EMBED.

CIRAS Economic Impact FY16-20



The five-year CIRAS economic impact totaled more than **\$3 billion**

CIRAS Impacts Over Five Years



Technology Investment Grant Program

- IEDA Manufacturing 4.0 Plan
- Goal: Rapidly increasing technology adoption
 - Manufacturers with 3-75 employees
 - CIRAS performed more than 150 on-site assessments in 3+ months
 - 80+ manufacturers have been approved for grants (\$2.8M state funds leveraging \$10M in private investment)
- Less than 8 months from idea to results

ISU Research Foundation

- ISURF works to facilitate and enhance Iowa State's inventive and creative works, and to transfer these works for the benefit of society
- ISURF owns and protects the intellectual property developed at Iowa State
- ISURF manages intellectual property protection and licensing for the Ames Laboratory
- ISURF collaborates with UNI and Drake University on technology transfer services

Impact of State Funding

The ISU Research Foundation is self-supportive and provides funding back to the university to support research and economic development efforts.

\$1.7 million
Iowa Companies: Licensed
Product Sales (CY21)

8
Startups Formed



47
Licenses & Options
Executed Worldwide,
22 in Iowa

118
License and Option Agreements
Yielding Income

Product
Development

Public Use &
Financial
Returns

Research &
Development

**Technology
Transfer
Lifecycle
FY2021**

Marketing



\$559.1 million
Total External Research
Funding Received

Invention

144
IP Disclosures



Evaluation



IP Protection

144
New Patent Apps Filed

50 US/71 TOTAL
U.S. Patents Issued





Positioned to Compete

#65

on the list of top 100 institutions
with issued patents

with 44 U.S. Utility Patents issued in calendar year 2020

Commercialization Program

- 163 projects supported since inception
- More than 100 Iowa companies have participated
- 55 startups assisted, including 34 that were started as a direct result of GIVF/RIF funding
- Funding invested in commercialization R & D projects has been leveraged 3:1 over the life of the program

Impact of State Funding (\$1,050,000)

RIF is the primary source of flexible funding to support economic development, research for initiation of startup companies, and to seed early stage research that has high potential for commercial success.

ISU Research Park



- Founded in 1987
- Started with 200 acres, today has 400 acres
- ~800,000 square feet of building space
- Currently, 96 companies and research centers and 10 affiliates, employing 2,253 and 89 people, respectively
- 20 pre-incubator companies remain in ISU Startup Factory space

Impact of State Funding (\$367,355)

Supports a variety of economic development projects to facilitate innovation from both on- and off-campus by providing workspace, collaboration, and educational assistance for startups through established *Fortune* 500 companies.

ISU Research Park

2022: On the road to progress

1. Decreased Vacancy

Headed into the pandemic ISURP had more than 150,000 square feet of unoccupied space. ISURP now has less than 10,000 square feet vacant.



2. Under Construction

ISURP anticipates three major construction projects in the Spring of 2022, and a fourth in the next fiscal year.



3. Corporate Engagement

ISURP took a leadership role in the formal establishment of Iowa State's corporate engagement strategy and teams. Many ISURP tenants are among the top 30 university partners.

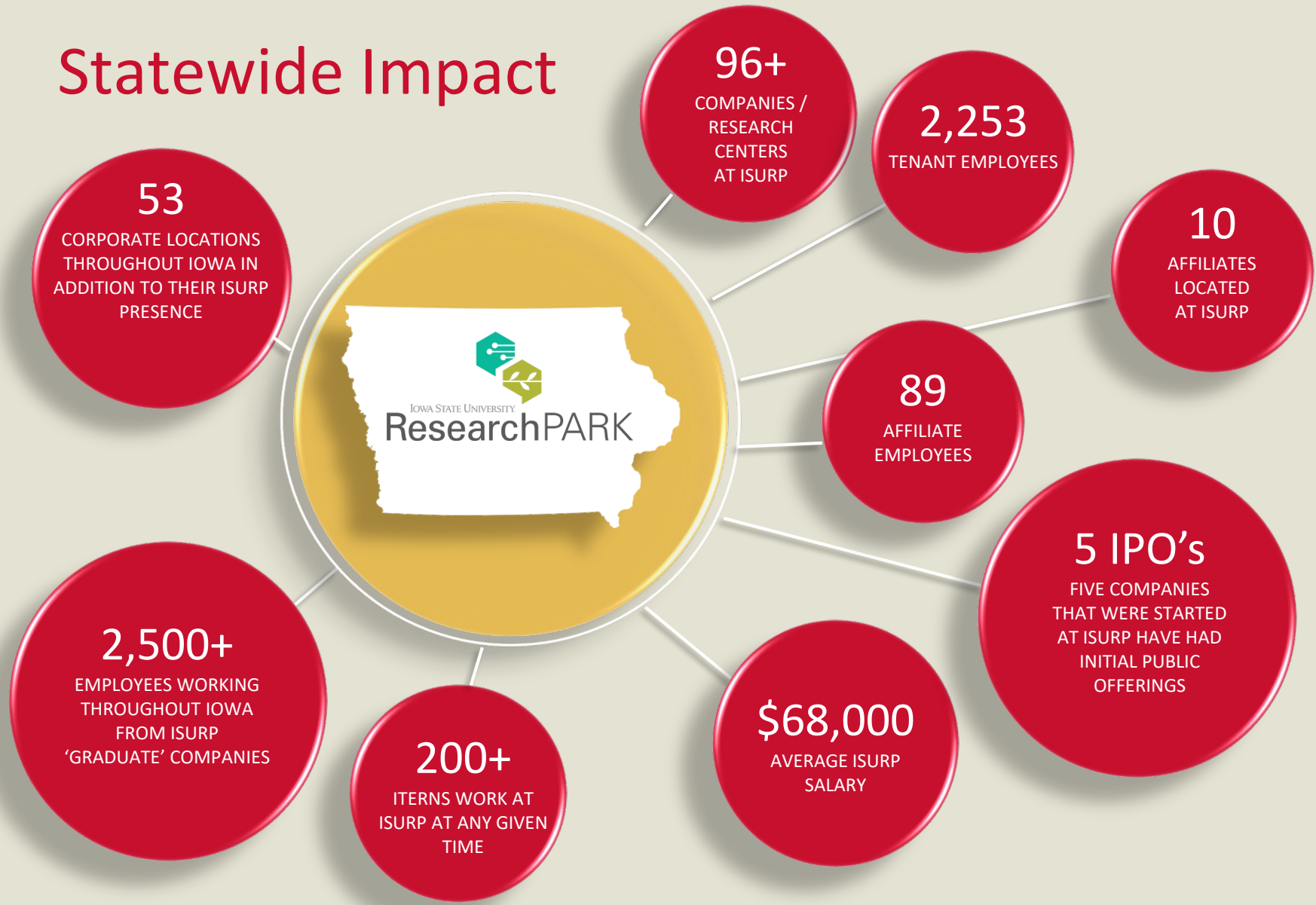


4. Partner Centric

ISURP continues to increase its footprint and impact through strategic partnerships; and will soon announce several strategic investments by corporate partners



Statewide Impact



ISU Pappajohn Center for Entrepreneurship

Experiential
Learning for
Students

Supports
Comprehensive
Academic
Offerings

- Interdisciplinary Minor
- Major for Business
- Graduate Certificate
- PhD Program
- New Experiential Master Degree

Statewide and
Local Venture
Competitions and
Workshops

Startup
Accelerators

- CYstarters
- Startup Factory
- Go-To-Market

Impact of State Funding (\$72,000)

State funding increases learning opportunities for students and increases resources available to current and prospective entrepreneurs.

ISU Startup Factory



Tech startup accelerator program | Two cohorts per year

Participants receive mentoring from entrepreneurs and alumni

11 cohorts to date (launched 2016) - 2 company exits | 1 pending

85 startup companies have completed program

\$40 million in funding raised

Statewide Go-To-Market Accelerator | Partnership BioConnect Iowa

Impact of State Funding (\$150,000)

State funding is used to support infrastructure and programming costs.

ISU Pappajohn Center for Entrepreneurship: FY21 Impacts



#11 | **#3** | **#1**
in the nation | in the midwest | in Iowa
for undergraduate entrepreneurship

Princeton Review 2021, 2022

Entrepreneurship
Model Program 2021

US Association for Small Business and
Entrepreneurship



USASBE

Workforce Development

8,426 Graduates



IOWA STATE UNIVERSITY
College of Engineering



OCYstarters
IOWA STATE UNIVERSITY
Pappajohn Center for Entrepreneurship

CyBIZ
Lab

2,600
Iowa
Internships
1000+
Iowa
employers
276
communities

15,000
Individuals

Entrepre-
neurship,
startups &
small business
classes &
programs

151
Engineering
Capstone
Projects
83
Iowa
companies
across
31
counties

200+
Interns at
the ISU
Research
Park

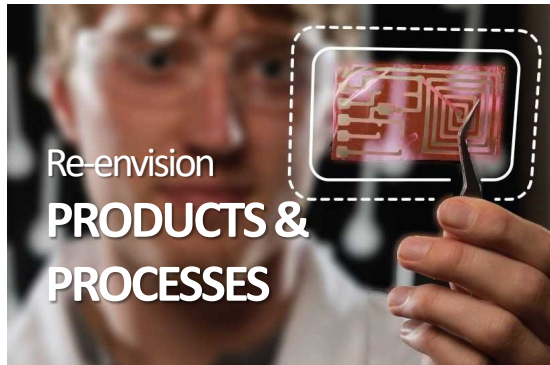
13
Student
Ventures

17
Students

250
Projects to
date

200
unique
consultants

Iowa State University has a 95% placement rate for new graduates within 6 months of graduation.



**Thank You
Questions?**



IOWA STATE UNIVERSITY

Office of the Vice President for Research

Bioscience Platforms Update

Peter K. Dorhout

Vice President for Research, ISU

February 1, 2022



The Iowa State Focus in the Biosciences

- Iowa State continues to support and grow innovation ecosystems and foster tech transfer from the three ISU-advantaged Bioscience Platforms



BioBased Products (BBP)



Digital and Precision Agriculture (D&PA)



Vaccines and immunotherapeutics (V&I)

- Experts working with ISU research teams to ID innovations with strong commercial potential; growing commercial partnerships with industry

Bioscience Platforms – Return on Investment

- Two years of investments have:
 - Launched/helped over **20** startup companies
 - Involved over **50** researchers/students
 - Created new partnerships with over **19** industries through the seed grant mechanisms
 - Garnered over **\$55 M** in federal/industrial funding that has been added to the innovation ecosystem in these platform areas

BBP Key Accomplishments

- Iowa State has a leadership role with Bioindustrial Manufacturing and Design Ecosystem (BioMADE) Institute. Through BioMADE, ISU received an initial \$2.1 million award in partnership with Cargill and Genomatica
- Launched a \$2.7 million DOE project creating biodegradable polymers in partnership with ADM, 3M and Diageo
- Launched two new Iowa-based startups based on ISU discoveries (bioasphalt, biopesticides)
- Acquired \$1M in scale-up equipment for ISU fermentation facility (leveraged from \$150k in biosciences funds)



BBP Success Story – Soylei Innovations

- Formed in 2020, Soylei is commercializing the ISURF patent portfolio of asphalt additives (~50 patents) developed by ISU researchers
- Additives are soy oil-based derivatives that improve asphalt quality and allow for higher-use recycled asphalt pavement (RAP) – both critical needs for the industry
- Soylei partnered with Ames-based Colorbiotics to market these derivatives under the “Invigorate Rejuvenator” trade name
- Soylei made its first commercial sales in 2021, after several successful field trials across the U.S.

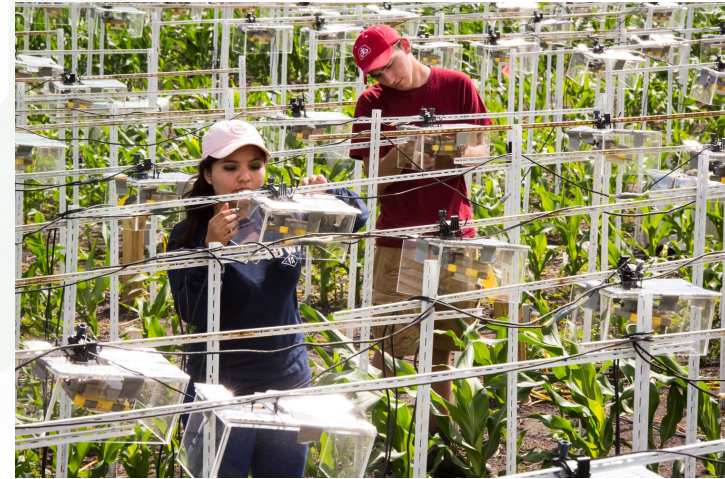


BBP Priorities With Additional Funding

- With additional funding, the platform will:
 - Create opportunities for expanded ISU-company engagement.
 - Build additional connections with the University of Iowa and UNI through an increased investment in university-industry partnership seed grants.
 - Expand opportunities at a one-of-a-kind in the U.S. university scale-up facility.

D&PA Accomplishments

- D&PA leadership played active role in helping startups identify and connect with talent at ISU. Iowa-based startups in the D&PA space contributed to economic growth with more than \$4.3 million in funding raised in CYs 2020-21
- Major multi-year federal research funding commitments:
 - AI Institute for Resilient Agriculture (AIIRA): \$20M
 - ARA: Wireless Living Lab for Smart and Connected Rural Communities: \$16M



D&PA Success Story – Dryland Genetics

- Dryland Genetics (DLG) is dedicated to developing a more resilient and sustainable food supply by improving yields of crops adapted to thrive on marginal lands with low grower inputs. DLG is focusing on proso millet, a highly water-efficient crop that can replace corn in swine grower/finisher rations with no dip in performance.
- Originally funded by Ames Seed Capital and other Iowa angel investors. DLG raised \$3.8 million in 2021 from Iowa-based Next Level Ventures and Stine Seed to maintain breeding program and expand marketing and sales



DP&A Priorities With Additional Funding

- With the requested additional funding, D&PA will design and establish a farmer trial network with growers who are eager to test cutting-edge technologies in their operations. This will be an investment in ag resilience and encourage innovation and early adoption of validated technologies
 - Largest portion (\$75k) will be used to establish a team of digital ag specialists to design and conduct field trials and analyze and share data with farmers and participating ag tech companies
 - Another portion (\$50k) will cover technical expenses required to conduct trials, compile, and share data

V&I Key Accomplishments

- Hosted a virtual technology conference with current and potential industry partners attracted 150 registrants from 5 countries
- Led discussions around collaboration and tech transfer with more than 60 companies including the top 6 global animal health companies
- With CARES Act funding, , ISU and UI, an Iowa-based startup and other partners continue to advance design and manufacturing of a next-generation COVID-19 nanovaccine



V&I Success Story – Merck Strategic Partnership

- Merck Animal Health strategic corporate partnership: finalized a strategic alliance with a Global Top 3 animal health firm
- Increased and consistent partner funding, combined with master service agreement, enhances efficiency for both parties and expedites commercial development
- Connections in R&D, Sales & Marketing, Manufacturing and Business Development = multiple future funding streams
- Fortifies ISU as a preferred partner
- Second 3-year strategic partnership with Top 10 global AH company in progress



V&I Priorities With Additional Funding

- Create GMP space at ISU Research Park: CY-VAX
 - Funds will be used as leverage for lab and equipment infrastructure with partners, consulting and regulatory support)
- Secondary priorities:
 - Expand strategic partnerships with animal health companies
 - Bolster seed grants to expand IP and licensable tech pipeline
 - Support startup development and new company recruitment through CY-VAX
 - Medgene, Genvax, Biogenesis, TerraBAT, ImmunoNanoMed, Codagenix

ISU Bioscience Platforms Request

The BOR request an additional **\$377,000** to continue to grow partnerships with BioConnect Iowa and Iowa industry to accelerate technology transfer and grow the innovation ecosystem for all three platforms. At the full \$1 million per platform, we will:

- Identify and accelerate development of commercial opportunities that provide benefit to Iowa-based companies and startups.
- Attract external funding and provide innovation ecosystem services.
- Incubate start-ups and accelerate technology transfer.
- Develop a skilled workforce with an innovation mindset.