



**STRATEGY** **1**



## **Arizona Optics Initiative**

**Option Year Two Annual Report**

**January 30, 2022**

**Small Business Administration (SBA)  
Regional Innovation Cluster (RIC) Program  
Contract Number 73351019C0003**



## Arizona Optics Initiative 2020 Annual Report

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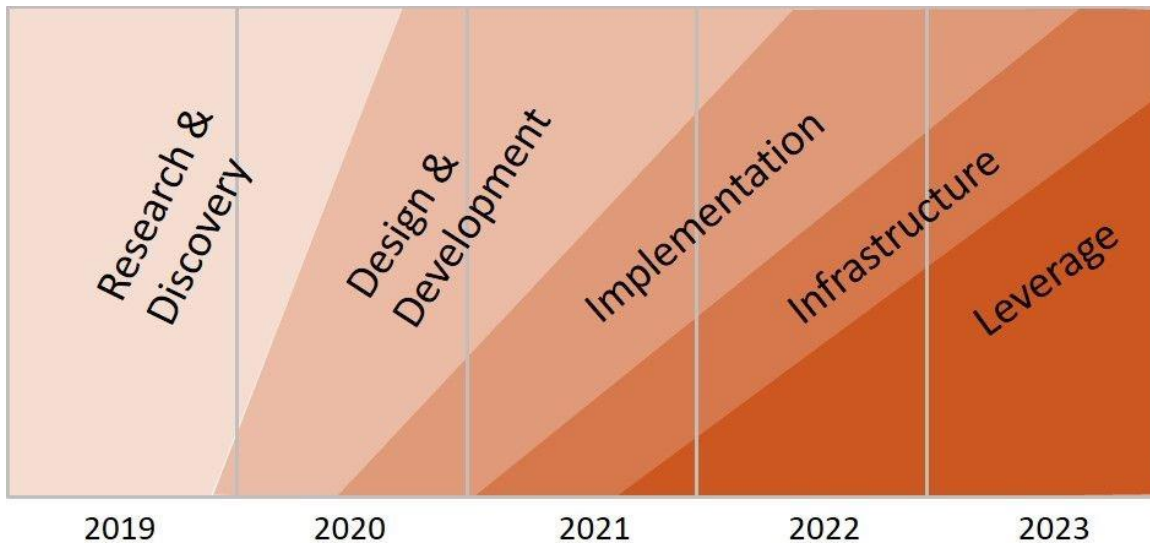
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## Introduction

The Arizona Optics Initiative (AOI) is a Small Business Administration (SBA) Regional Innovation Cluster (RIC) program contract award to Strategy1, a Tucson based business consultancy. The objective of the contract is to help grow the Arizona optics industry. The program is open to all Arizona companies that are engaged in optics, photonics, or astronomy, including applications of these technologies.

The contract is funded annually with 2019 as the Base Year, with up to four option years, each with a value of \$500,000. 2021 was Option Year Ywo.

Anchored by the University of Arizona Wyant College of Optical Sciences and Steward Observatory, Arizona is a world class center of optics, photonics, and astronomy. However, that academic prowess has been slow to develop into a robust commercial industry. As shown in the Program Overview below, it is the aim of AOI to change that in a positive way.



**Arizona Optics Initiative Program Overview**



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It is important to note that the optics industry in Arizona is represented by the industry cluster, Optics Valley, a Committee of the Arizona Technology Council. The AOI team works closely with Optics Valley, and the AOI activities are intended to make Optics Valley the sustainable optics cluster in Arizona.

To accomplish our objectives, AOI has been divided into three separate thrusts:

- Facilitate the scale-up and growth of existing optics companies (60% of effort).
- Promote the formation and development of new entrepreneurial companies (25%).
- Enhance the visibility and community awareness of the Arizona optics industry as a critical enabling technology for the 4<sup>th</sup> Industrial Revolution (15%).

Overall, the primary activity in the 2019 Base Year was Research and Discovery. The plan for 2020 was to build on that knowledge and begin to Design and Implement programs to support our companies. However, we were rudely interrupted by the COVID-19 pandemic, and 2020 was largely lost. It was not until early 2021 that we were again able to move forward with our program activities, although they were entirely virtual until, late in the year. One of the highlights of 2021 was clearly the breakthrough activities with Raytheon that began early in the year. Overall, we are pleased with the progress we made 2021 and look forward to 2022.

In the First Quarter, we updated our Strategic Impact Plan (2021 – 2024). It is included herein as Appendix 1. The 2021 Objectives and results are in the next section of this Annual Report.

A summary of our program resources is shown in Appendix 2.

## 2021 Objectives and Result

- Establish an ongoing Optics Valley program in the **Phoenix** area
  - This objective was held back by the continued presence of the COVID pandemic and the lack of face-to-face contacts.
- Develop a proactive program to interact with all **government** levels from City to Federal
  - Optics Valley has been an active participant in the activities of the Congressional Optics and Photonics Caucus. We have been actively engaged with the Arizona Commerce Authority (ACA) around the SBIR FAST Grant program; there is renewed ACA interest in supporting Optics Valley with international STEP funds in 2022.
- Create Optics Valley **organizing documents** that guide transition to, and support of, a self-sustaining organization
  - Discussions began to determine scope and limits, but first draft documents will be started in early 2022.
- Design an **education** and implementation plan to feature optics in both STEM and Career and Technical Education (CTE) through the state.
  - In cooperation with Optics Valley, Pima Community College (PCC) has announced the Optical Manufacturing Technician Registered Apprenticeship and Non-credit Training Program.
  - PCC has now committed to begin courses for Certificate and Associate Degree programs in 2022.
  - In Q4 we expanded the community College training discussions to include Maricopa Community Colleges.
- Develop and implement a **coaching and mentoring** program that provides measurable progress for both ongoing and entrepreneurial companies
  - During 4Q we completed our 2021 initiative around conducting the Vector Reports Very Small Business Assessment (VSBA). In all, 9 of our cluster companies opted to take advantage of this opportunity to discover key vulnerabilities and opportunities for process improvement in their businesses. For each of the companies the Assessment identified a small number of specific vulnerabilities in business operations that will potentially have the highest leverage to improve company performance the most effectively. These process improvements, over time, will better position our cluster companies for engagement with Raytheon and other larger systems companies.

## Facilitate the Scale-up of Existing Optics Companies

In March, we held our 4<sup>th</sup> Annual Arizona Photonics Days. It was a virtual event held March 3-5, 2021. It was held from 7:00 to noon each day so that our colleagues from Europe and Israel could join us. Overall, we had over 200 participants from 20 countries. The program featured three keynote presentations, 24 technical presentations, and over 30 five-minute company pitches.

In addition, the year got off to a good start with several other activities:

- We continued our monthly Technical Presentation series. These are very popular with 40-50 participants for each session. They are delivered early in the morning to include our European associates from the Global Photonics Alliance.
- We transitioned our *FOCUS* Newsletter from bi-weekly to monthly.
- We started industry focused networking events. At first these were virtual, but later in the year they migrated into face-to-face events, hosted by a specific company.
- We began a working group to focus on supply chain issues. While it was active all year, the group struggled with the vast breadth of potential supply chain issues. During the fourth quarter the group finally began to narrow the scope to focus on an area common to most of the companies: machine parts fabrication. This is an area where optics has especially critical requirements.
- Our coaching and mentoring program began to use a new tool, the Very Small Business Assessment (VSBA) from Vector Reports. VSBA has greatly helped our coaches target specific improvement areas for each company.

Raytheon emerged as a key opportunity. Our AOI team has been reaching out to Raytheon from the very beginning, but with limited success. Early in 2021 those efforts began to bear fruit. Initial discussions were exploratory. Then Raytheon issued an RFI to 41 of our companies; 27 responded. Raytheon then selected a cohort of nine for initial “interviews.” All but two of the meetings were completed in Q4, and Raytheon is now considering the next cohort. The relationship has turned into one of mutual trust with open honest discussion. Raytheon is giving our small companies both guidance and support; they want to develop local suppliers. One specific area in which they are asking Optics Valley for help is locating and/or developing precision fabrication facilities (machine shops) that can meet their exacting requirements. As mentioned above, that will be the 2022 emphasis for our supply chain group.



Face-to-face optics industry events began to return in late summer. The first of these was SPIE's Optics + Photonics in San Diego in August. While attendance was only about half of previous years, it was good to have that personal interaction. Our local event was After5 networking, hosted by Edmund Optics. Edmund was celebrating the opening of their second facility in Tucson, and it had over 100 in attendance.

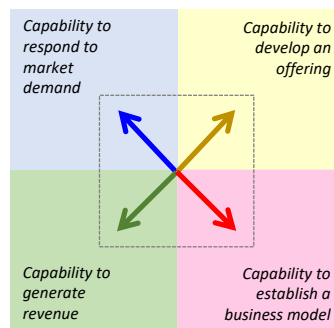
Edmund Optics is a worldwide provider of optical components and systems. Their new facility is for design, development, and limited manufacturing, and it will add about 100 new employees. One thing that is particularly important about this move is that it is bringing back some design capability from China to the USA.

One additional significant event in 2022 is that Viavi Solutions, a worldwide supplier of optical coatings, announced that they are moving their corporate headquarters from California to Arizona. As part of that transition, they are building a new coatings plant in Arizona. When fully operational, that plant will add several hundred employees to our industry payroll. In conversations with senior management, they are quite candid that if things go as planned, they are very open to moving even more resources to Arizona.

## Promote the Formation and Development of New Entrepreneurial Optics Companies

Our effort to support entrepreneurial companies continues to be focused on individual company coaching and mentoring. Those activities are primarily in the area of general company development, as well as SBIR/STTR support.

In company development, we now rely on the Very Small Business Assessment (VSBA) from Vector Reports. The VSBA takes less than an hour to complete and measures a company's maturity in four areas as shown in the graphic below.



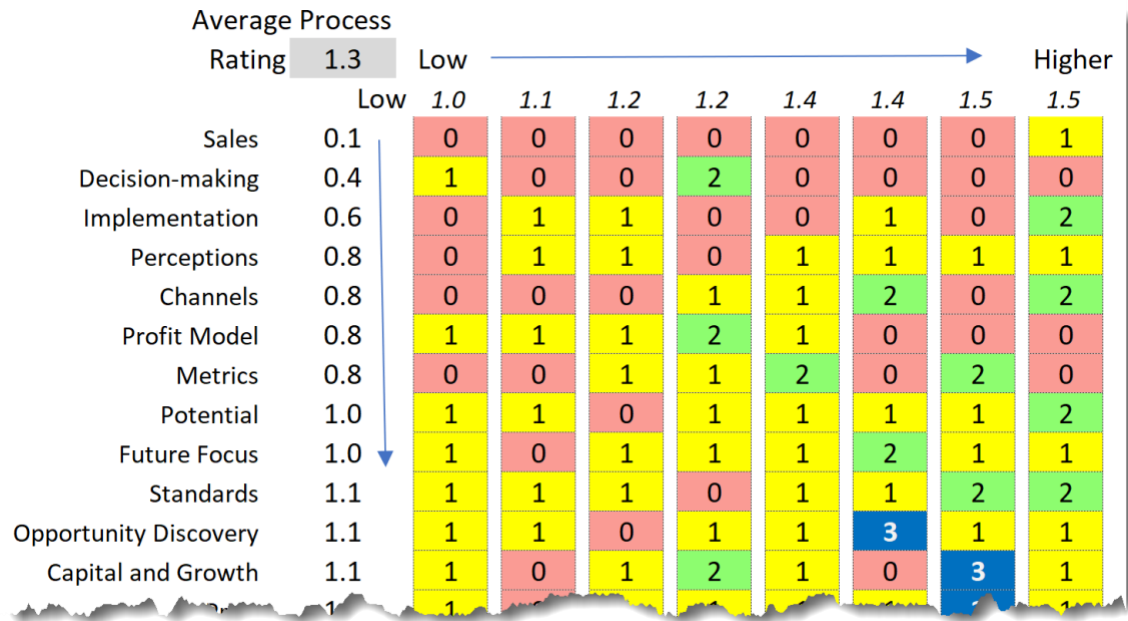
The VSBA then generates a self-rated report that gives specific guidance to the company for actions to take to improve in specific areas. It is then the responsibility of company management and their AOI coach to develop a prioritized implementation plan for those actions.

A description of the VSBA is in Appendix 3.



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We have now had enough companies take the VSBA so that we can see patterns where companies are consistently weak. The graphic below illustrates these common vulnerabilities.



As the data shows, the weak areas are not in product, but about business issues. This now gives AOI guidance for developing high impact workshops to help a company develop,

For our work with SBIR/STTR programs we use the ITAB Assessment from Vector Reports. The ITAB Assessment is similar to the VSBA, but it specifically measures areas that are relevant to SBIR proposals and implementation. It also generates a report to give the company and the coach guidance to develop a plan. We have now completed six ITAB assessments. Once we have a sufficient statistical sample, we will develop appropriate workshops to facilitate company performance improvement.

## **Enhance the Visibility and Community Awareness of the Arizona Optics Industry**

With the continued COVID-19 restrictions, there were few opportunities for community or marketing events in early 2021. However, Optics Valley is a sponsor of IdeaFunding, an annual one-day event, which was a virtual event in April 2021. It is an entrepreneurial pitch competition with multiple tracks. Optics Valley is the sponsor of the Science and Technology track. In addition to sponsorship money, we have provided a speaker for the technology discussion panel and a judge for the competition.

IdeaFunding has also given us the opportunity to do something that has been on our list for a long time: make a video. This is a one-minute video to introduce Optics Valley, our role in the industry and some of our activities, at a high level. A link to that video is located here (skip the commercial):

<https://www.youtube.com/watch?v=NXiD1qPKTWw>

In another virtual event, we teamed with the UArizona Flandrau Science Center and Planetarium for our International Day of Light (ILD) program on May 16<sup>th</sup>. Over the course of the four-hour event, we had many different content segments that directly targeted young children, teen, and adults, as well as a laser show for the finale. While we are proud of the virtual event this year, we are looking forward to continuing our partnership with Flandrau for a live event in 2022.

The highlight of the fall was the Arizona Technology Council Tech + Business Expo, held on October 6<sup>th</sup>. Optics Valley was a Silver Sponsor of the event and featured Viavi as our innovation speaker. There were about 60 exhibitors, including about a dozen of our Optics Valley members. We also unveiled our new Optics Valley booth backdrop; see Appendix 4. Overall, there were about 300 people in attendance. Since the colored wristbands were so successful at the Edmund Optics mixer, they were used again at the Expo.

Also in Q4, we completed a major project to upgrade our website:

<https://www.aztechcouncil.org/optics-valley-arizona/>

This included an update to our popular industry White Paper, donated by the Commercial Real Estate Group of Tucson:

[https://www.aztechcouncil.org/wp-content/uploads/2021/08/Optics-WP\\_January-2022\\_FINALtoPost.pdf](https://www.aztechcouncil.org/wp-content/uploads/2021/08/Optics-WP_January-2022_FINALtoPost.pdf)



Finally, it is important to note that Q4 included intense planning for our two annual major events, both of which were held in January 2022, and both were face-to-face. The first was our flagship Optics Valley event, the 5<sup>th</sup> Annual Arizona Photonics Days (APD). The original plan was to hold APD once again at the BIO5 Institute on the UArizona main campus. In early December it became clear that due to UArizona COVID restrictions BIO5 would be too small. In order to keep our conference on track, we decided to move to the Event Center at the UArizona Tech Park, which is much larger. Needless to say, this resulted in a lot of logistics scrambling. APD was a success and will be reported in detail in our Q1 2022 report.

The second event was SPIE's Photonics West in San Francisco the week following APD. The big planning challenge was many organizations, including Optics Valley, wrestling with whether or not to participate in the show due to COVID Omicron. In the end we decided to go. This event was also a success and details will be reported in our next quarterly report.

Appendix 1



**Strategic Impact Plan  
2021 – 2024**

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## **Optics Valley Strategic Impact Plan (2021 – 2024)**

### **Introduction**

In October 1992, the Arizona Optics Industry Association (AOIA) was formed as the first optics industry cluster in the world. At the end of December 2016, AOIA was dissolved as an independent organization, and its work continues as Optics Valley, a Committee of the Arizona Technology Council (AZTC). Today, Optics Valley is recognized as a world-renowned industry cluster representing the optics, photonics and astronomy communities in Arizona.

### **Mission** (This is today and for the foreseeable future.)

The mission of Optics Valley is to catalyze, convene and connect optics, photonics, astronomy, and supporting business interests throughout Arizona.

### **Vision 2024** (This is what we strive to be at the end of 2023 when the SBA contract is complete.)

In 2024, with over 200 members throughout Arizona, Optics Valley is widely recognized as one of the leading global clusters for optics, photonics and astronomy. Our members have a strong sense of community and a culture of cooperation and collaboration to foster continued industry growth. We are undisputedly the most active Committee in the Arizona Technology Council (AZTC), and our members participate actively in other AZTC programs and benefits.

It is important to note that our members come from the broadest sense of the optics industry. We include not only companies with a direct focus on technology improvements, but we also embrace application and end user companies who implement these creative innovations. In addition, we actively solicit supply chain and other support organizations. Additionally, we have a wide variety of individual and student members.

We have quarterly business meetings in both Tucson and Phoenix. Member participation has matured to where there are active subgroups focused on specific end-user industries and opportunities, including medicine, aerospace and defense, and Quantum Information Science (QIS).



Ongoing support programs include the on-line Member Directory, the bi-weekly FOCUS newsletter, monthly networking and subgroup meetings, as well as Tech Series webinars, which are promoted and broadcast worldwide. In addition, our dynamic website is always current and filled with valuable information, including a company job board. Finally, Optics Valley sponsors an Other Transaction Opportunities (OTA) consortium to assist companies to respond to Federal opportunities including SBIR/STTR.

We maintain worldwide strategic collaborations and partnerships including membership in SPIE, OSA and IEEE. Annually, there is an Optics Valley “pavilion” in many key worldwide conferences and exhibitions. We continue to play a leadership role in the Global Photonics Alliance (GPA), a group of over 50 optics and photonics clusters. In addition, we maintain close relationships with UArizona, especially the Wyant College of Optical Sciences, as well as the Arizona Tech Parks.

Our flagship event continues to be Arizona Photonics Days (APD), held annually in Tucson, just prior to Photonics West. We attract over 250 attendees to this event where there is an active exchange of both company and technical information, as well as lots of networking time to build our worldwide collaborative relationships.

In order to support our industry growth, Optics Valley is heavily involved in workforce development. Our Advisory Committee has helped build optics training at Pima Community College (PCC) into a complete independent program that is a model for other similar programs. In addition, we serve as a hub for apprentice/internship programs for both university and high school students.

In order to develop the pipeline for tomorrow’s workforce, we are active in optics education in K-12 programs. We work closely with the AZTC SciTech Institute to promote the inclusion of optics curriculum in STEM programs throughout the state. We also work with Pima JTED and high schools throughout our region to expand the optics content to more locations in their programs.

Our members are active in the entrepreneurial community, many providing coaching and mentoring to fledgling companies in support of UArizona and community incubator and accelerator programs. There is a monthly informal get together to help young companies get to know each other. We have a focused sub-group within the Desert Angels to provide a vehicle for investment opportunities.

We are active in the community to enhance visibility and awareness of our important enabling industry. This is highlighted by the annual celebration of the International Day of Light on May 16<sup>th</sup>. In addition, we participate and sponsor



many events throughout the year in both Tucson and Phoenix. We have also produced informational videos for both the community and corporate attraction.

In the area of public policy, we cooperate with and support the National Photonics Initiative (NPI) and the Congressional Photonics Caucus. We have a close relationship with the Arizona Governor's Office, the Arizona Commerce Authority, and county/city administrations throughout the State of Arizona.

Finally, Optics Valley is financially and organizationally stable. We have an elected Advisory Board, made up of member volunteer leaders, which provides guidance and direction to our full time paid Executive Director, who is an employee of AZTC. He/she is supported by other AZTC employees who share joint duties. Optics Valley finances are provided by sponsorships and event fees as well as dedicated endowments.





## 2021 Optics Valley and AOI Objectives

**Overall 2024 Goal:** Optics Valley is a sustainable organization after the SBA Arizona Optics Initiative (AOI) program is completed at the end of 2023.

### 2021 Objective      (Objective Lead)

Establish an ongoing Optics Valley program in the **Phoenix** area. (Jack)

Develop a proactive program to interact with all **government** levels from city to Federal. (John)

Create Optics Valley **organizing documents** that guide transition to, and support of, a self-sustaining organization. (Mark)

Design an **education** and implementation plan to feature optics in both STEM and Career and Technical Education (CTE) through the state. (John)

Develop and implement a **coaching and mentoring** program that provides measurable progress for both ongoing and entrepreneurial companies (Don)

## Appendix 2 – Program Support

### Arizona Optics Initiative (AOI) Program Partners

#### Formal in Proposal

#### Key Contact(s)

- Arizona Technology Council     Steve Zylstra, CEO
- Pima Community College     Ian Roark, VP; Greg Wilson, Dean
- UArizona Tech Launch     Doug Hockstad, AVP
- UArizona Tech Parks     Carol Stewart, AVP; Eric Smith, Exec Dir

#### Informal

- Wyant College of Optical Sciences     Tom Koch, Dean
- Arizona Commerce Authority     Krista McGarvey, VP
- City of Tucson     Barbra Coffee, Director Economic Initiatives
- Pima County     John Moffatt, Exec Dir; P. Kavanaugh, Dir
- Startup Tucson     Liz Pocock, CEO
- Pima JTED     Kathy Prather, Superintendent
- And many more...

#### Srtategy1 AOI Team

#### Focus/Expertise

- John Dennis     Program Manager
- Mary Breeding     Administration and Support
- Mark Jepperson     Entrepreneurial Ecosystem/Building Change
- Peter Mantas     Mentoring Entrepreneurial Companies
- Don Orton     Growing Companies
- Jack Schumann     Optics Industry
- Sonia Vohnout     Federal Funding

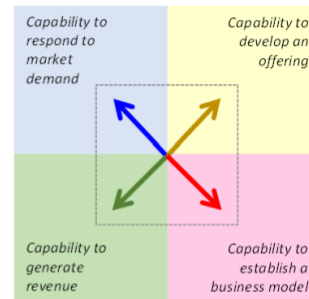
## Appendix 3 – Very Small Business Assessment (VSBA)

### Very Small Business (VSB) Assessment

*An Assessment for businesses looking to find and correct process vulnerabilities*

Very small businesses (5 to 50 employees) face many business challenges but typically don't have fully developed abilities or an infrastructure to properly respond to them.

Deciding how to utilize your limited resources in an environment of competition creates a Catch-22: *You need more resources to develop more robust infrastructure, tools and methods required to be successful; however, if you already had that infrastructure in place, you could more easily obtain needed additional resources.*



Too often, very small businesses—even those with a great product—are pressed to act quickly and without a full view of all that is required to build a business. Leaders may find themselves compelled to work “on” the business as opposed to “in” the business—a subtle, but important, distinction. In the end, these business-building efforts must produce a solution for the customer in a way that creates profit, supports the right kind of growth, and produces happy customers.

Vector Reports™ recognizes that very small businesses need to simultaneously develop at least four important capabilities to be able to move from surviving to thriving:



Those abilities are almost always present in successful businesses! And those abilities are derived and developed from concurrently leveraging and strengthening many process skills. Most businesses fail not from the lack of a good idea, but from the lack of robust supporting infrastructures wrapped around that idea or product that prevent bringing it to fruition.

Want to know the maturity of *your* processes? Use a **VSB Assessment** to self-select statements that describe how good you think you are in numerous critical process areas. You get a custom Report that quickly shows what needs attention as well as prioritized process improvement recommendations for your unique current state.

While growing your very small business, you will probably not immediately demonstrate world-class attributes. To help you build that capability infrastructure, **VSB Assessments** provide you with targeted metrics around your *business* expertise, *product* operations, *marketing* proficiency, and competency to *commercialize* your product—all in a valuable learning experience that takes only about an hour.

Find out more:

<https://vimeo.com/551325956> or contact us at [VectorReports@gmail.com](mailto:VectorReports@gmail.com)



Appendix 4 – Booth Backdrop

