



STRATEGY **1**



Arizona Optics Initiative

Base Year Annual Report

January 30, 2020

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



Arizona Optics Initiative 2019 Annual Report

Table of Contents

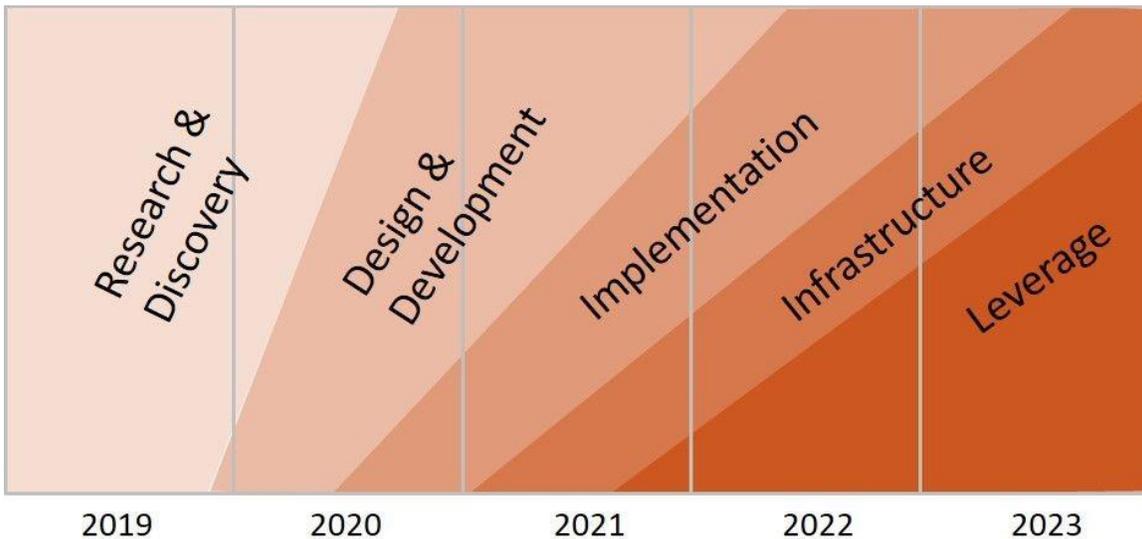
<u>Subject Area</u>	Page
Introduction	3
Facilitate the Scale-up of Existing Optics Companies	5
Promote Entrepreneurial Companies	9
Enhance Visibility and Community Awareness	10
Educate to Fill the Pipeline	13
Exhibit 1 – Program Support	14

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 four option years, each with a value of \$500,000.

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 not yet been translated 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



STRATEGY 1

As is shown in the diagram, the theme of 2019 has been Research and Discovery. What is the current status? In order to accomplish our objectives, AOI has been divided into three separate thrusts:

- Facilitate the scale-up and growth of existing optics companies.
- Promote the formation and development of new entrepreneurial companies.
- Enhance the visibility and community awareness of the Arizona optics industry as a critical enabling technology for the 4th Industrial Revolution.

The activities for each of these thrusts are described in the following sections of this report. We have also included a separate section on education since it touches all three thrusts, but each in a different way. Education is the key to filling the pipeline for sustained change.

Even though company attraction is not a formal part of AOI, we are pleased to report that two companies have now moved to Tucson because of our activities.

Facilitate the scale-up of existing optics companies

The first activity in this area was to interview 27 companies to determine their perceived needs. This yielded four specific themes:

- **Workforce Development:** In order to grow, companies need more employees with the right skillsets, especially technicians.
- **Business Development:** There is a need for leaders with business, not technical, acumen.
- **Directory of Capabilities:** Most companies do not understand the capabilities of others and how they could collaborate rather than compete.
- **Funding Sources:** There is a need for money to respond to opportunities.

With regard to **Workforce Development**, we are working closely with Pima Community College (PCC) to rebuild their optical technician training program. We are helping them design the curriculum and have formed an industry advisory committee to support that goal. While this effort is starting small with only a few courses, it is our intent to grow it into an independent certificate program.

We have met with our local companies in two group meetings to define the content needed in the **Directory of Capabilities** to act as an information and business referral infrastructure. From those meetings, we have developed a draft Statement of Work that is currently under review.

It is our firm belief that once these existing companies improve their operational footing and add business acumen capabilities, **Funding** will follow. In addition, we will be developing programs to introduce them to SBDC, SCORE, as well as funding sources.

It is in the area of **Business Development** where we have applied most of our effort. First, we have identified several companies where we are starting direct coaching and mentoring. These are companies where our initial interview yielded some obvious actionable activity, and where we believe that management will be receptive to our recommendations and make appropriate changes.

We also identified several companies that could benefit from collaborating in order to take advantage of larger opportunities that they could not address individually. In order to initiate that activity, we designed a **Growth Workshop** that is described below.

STRATEGY 1

Growth Workshop

Our research indicated a lack of “business acumen” for significant growth. Companies are growing slowly, but not thinking, or acting, in ways that address 200% or 300% growth. That level of growth requires a different kind of thinking beyond organic or their normal operational growth



The Growth Workshop

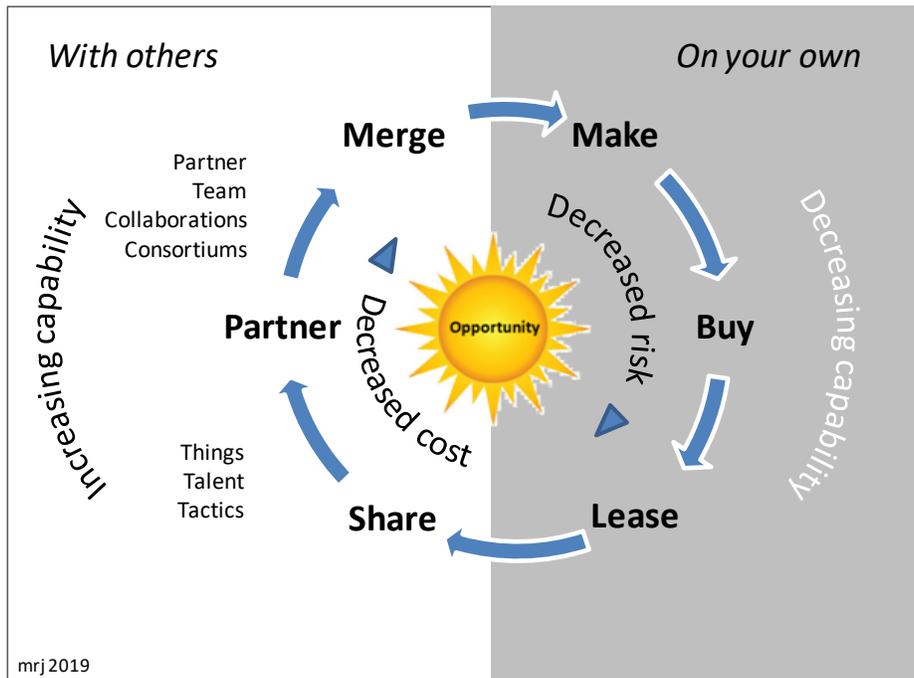
This workshop was designed to break norms, and get these successful companies to: start talking to each other, make it okay to talk about “chasing opportunities” together, introduce teaming concepts (partnerships, consortiums, acquisitions), and to get them involved in leading Optics Valley.

The key message was for them to “*Open the aperture,*” and to realize, as the book title says, *What got you here, won't get you there,* by Marshall Goldsmith. A new way of behaving is needed.

STRATEGY 1

This workshop was held in late December for ten companies and progress was made. There is early acceptance that they have a leadership role in this industry cluster. The result was not a “wow,” but instead a first step to building new business relationships.

They now want AOI to help them get organized and to provide some guidance in implementing growth-oriented working relationships. Key growth concepts are illustrated in the graphic below.



The Growth Wheel

Another area where Optics Valley provides direct support to our companies is by participation in industry conferences and trade shows. We do this throughout the year and throughout the world, but two are of primary importance.

The first is Arizona Photonics Days. This two-day conference developed by Optics Valley is in its third year in January 2020, and we expect 150 attendees. It is designed to bring companies to Tucson for a combination of technical presentations and networking to develop personal relationships. Every attending company has the opportunity to make a short pitch.



Arizona Photonics Days

The second conference is Photonics West, held annually in San Francisco and it attracts over 20,000 attendees. Optics Valley has a pavilion to keep many of our companies together. Optics Valley also sponsors an “ice cream social” to draw visitors to our pavilion.



Optics Valley Pavilion at Photonics West

Promote the formation and development of new entrepreneurial optics companies

Our primary activity in 2019 was to thoroughly research the entrepreneurial “ecosystem” in Tucson. Our primary finding is that there is no operating “system.” There are many bits and pieces, but they are not working together in any way that can be called a system. Some are willing to talk about collaboration, but “As long as I am in charge.”

In addition, or maybe as a result, we also found three consistent themes:

- Most company management has a lack of business acumen, typically because most leaders of these optical companies are the actual technology inventors.
- Overall, there is a lack of well managed companies that have business models that can scale-up and grow.
- Finally, there is a lack of funding to grow these companies.

Our analysis of this situation is really quite simple: If company management focuses on growing the business, instead of technology, company quality will improve, and money will flow.

In order to make improvements in this situation, and because we are focused on the optics industry, we will work closely with the University of Arizona. The University is the source of most of the inventions, and those inventions need a license from the University in order to pursue commercialization. Also, the University already has a technology incubator.

The good news is that the University has made significant investments over the past several months to improve the incubator. However, there are still other organizational and resource bottlenecks to having a smoothly flowing ecosystem.

It is our intention to work with University senior management to make the appropriate changes. Fortunately, there are several new people in key roles who we believe are open to such changes. Our idea is to create a “sub-culture” within optics. Once that process is proven to work successfully, it can be replicated with other technologies.

One other area of emphasis with entrepreneurial optics companies is in federal program funding, including SBIR/STTR. The AOI Team is in the process of creating a template to guide companies through the process. This template will have two areas of focus. The first will be what companies need to do to prepare for a RFP. The second will walk companies through the proposal process, with specific tips for a successful proposal.

Enhance the visibility of the Arizona optics industry as a critical enabling technology for the Fourth Industrial Revolution (4IR)

The final, but certainly not least, thrust of AOI is visibility and community awareness. Even though Southern Arizona is world renowned for our technical capabilities in optics, photonics, and astronomy, it is astounding how little is known in our community.

One of our most beneficial investments in this area has been to start working with professional marketing. Here are some of the elements that we have developed with this support:

- A new tri-fold brochure that has drawn acclaim from many quarters. The cover of that brochure has been adapted for use in several other ads and promotions, as shown in the example below.
- A new logo and promotional flyers for Arizona Photonics Days.
- Improved layout and content of our Optics Valley website: OpticsValleyAZ.org
- Arizona Optics Industry Whitepaper posted on the website.



Brochure cover adapted for Chamber of Commerce ad

STRATEGY 1

A second important activity has been the commissioning of an Arizona Optics Industry Study, the first since 2008. For this endeavor we are using the same marketing company that publishes the annual survey for one of the major industry trade associations. The basic research and foundation work is complete, and we have reached out to 524 Arizona companies. We are currently in the process of gathering individual company data. We anticipate publishing the study results in Q2 2020.

Optics Valley has been active in sponsoring community events as a way to promote awareness. The TENWEST Impact Festival is a 10-day series of community events, attracting almost ten thousand participants. It is designed to highlight many key aspects of life in Southern Arizona. In 2019, the technology day was “The Fourth industrial Revolution and YOU.” Optics Valley sponsored the keynote lunch for 350 people.



Technology Day Keynote Lunch

Another major event in Tucson is the Arizona Technology Council annual Tech + Business Expo. This event is a combination of business presentations and trade show to highlight local technology. Over a dozen of our optics companies were exhibitors. In addition, Optics Valley sponsored the keynote speaker, Dr. James C. Wyant, founding Dean at the University of Arizona Wyant College of Optical Sciences.



Dr. James C. Wyant

The final event that deserves recognition is the International Day of Light.



International Day of Light

16 May

The International Day of Light was created by the United Nations Education, Scientific and Cultural Organization to celebrate the first successful use of a laser. It is celebrated on May 16th each year. In 2019, Optics Valley held an industry reception for about 50 people to honor the day.



International Day of Light Reception

In 2020, we are planning a more extensive community event to celebrate the 60th anniversary of the invention of the laser. Since May 16th falls on a Saturday, we will also have a family focus. We are hoping to attract over one thousand participants.

Educate to Fill the Pipeline

In order to have a lasting impact both in the local community and technology circles, we must have a focus on education. Optics is ubiquitous in our lives touching virtually every industry: aerospace and defense, automotive, medical, communications, and agriculture to name just a few.

Students and parents need to understand that optics represents careers of the future, not the past, and teachers need updated information in order not to be wary of teaching the basics of optics.

Earlier in this report we noted the work that AOI is doing with Pima Community College to rebuild technician training. In addition, we have agreement with the Pima Joint Technical Education District (JTED) to include optics in their new building in the fall of 2020. They will include optics applications in their mining and aerospace and defense industry work as well as basic optics in the core curriculum.

We are also working with Pima County schools in two other ways. The first is to include optics in the high school STEM programs. The second is to have optics companies in the middle school career shadowing program to expose students at an early age.

Exhibit 1 – Program Support

AOI Program Partners

Formal in Proposal

Key Contact(s)

- Arizona Technology Council Steve Zylstra, CEO; Jeff Sales, Director SA
- Pima Community College Ian Roark, VP; Greg Wilson, Dean
- UArizona Tech Launch Doug Hockstad, AVP; Joann MacMaster, Dir
- 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
- Barb Campbell Mentoring, K-12 Education
- Mark Jepperson Entrepreneurial Ecosystem/Building Change
- Peter Mantas Mentoring Entrepreneurial Companies
- Don Orton Growing Companies
- Jack Schumann Optics Industry
- Sonia Vohnout Federal Funding