

# BizTucson

SPECIAL REPORT

THE REGION'S BUSINESS MAGAZINE

## ENTREPRENEURS POWER NEW ECONOMY

*VISION FOR FUTURE*





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## Vision for Future: Entrepreneurs Power New Economy

A Task Force of community leaders is on a crusade to re-shape the region's entrepreneurial economy as we know it. They've been hard at work for more than two years shaping the roadmap that they hope will propel Tucson as a global leader in the knowledge-based economy. Their Vision for the Future is a comprehensive analysis that includes the past, present and future of entrepreneurship in Southern Arizona.

The paramount objective of the Task Force is to create an environment where entrepreneurship and innovation thrives and venture capital is abundant. Then Tucson can grow more of its own idea-based companies – which create prosperity and high-wage jobs for the future. Economists refer to these ventures as “gazelles” – highly scalable rapidly growing enterprises – that become players on the international stage.

The Task Force interviewed 14 local entrepreneurs who successfully built idea-based scalable businesses in

Southern Arizona. They shared the challenges, opportunities, strengths and weaknesses of the Tucson region which they encountered while launching their companies. Then the Task Force prepared its recommendations for creating entrepreneurial growth conditions.

The chairman of the Entrepreneurial Economy for Tucson Task Force is venture capitalist Harry George. Initially from Boston, George has helped launch more than 60 companies - so far. Among them, he co-founded Interleaf, a pioneer in desktop publishing and also was one of the first three investors in E-Ink, which developed the technology that ultimately became the Kindle. His company, Solstice Capital, is the only institutional venture capital firm in Tucson. He'd like to change that. He has a practical, yet global vision for Tucson.

In this report, we're given a glimpse of business icons of our state's first century. Hughes Missile Systems, Ven-

tana Medical Systems and Burr-Brown are clearly the landmark global powerhouses (ultimately acquired by Raytheon Missile Systems, Roche Group and Texas Instruments, respectively). George unequivocally states that in the future, rather than three global powerhouses, the goal should be to have ten in the next decade.

Read on to see how we can accomplish this.

UA economist Marshall Vest calls this report “the best vision statement/assessment I've seen for Tucson. Great information. Solid recommendations.” BizTucson salutes the members of the all-volunteer Task Force for their unwavering commitment and continuing hard work, as they raise the bar for the region.

Steven E. Rosenberg  
Owner & Publisher  
BizTucson

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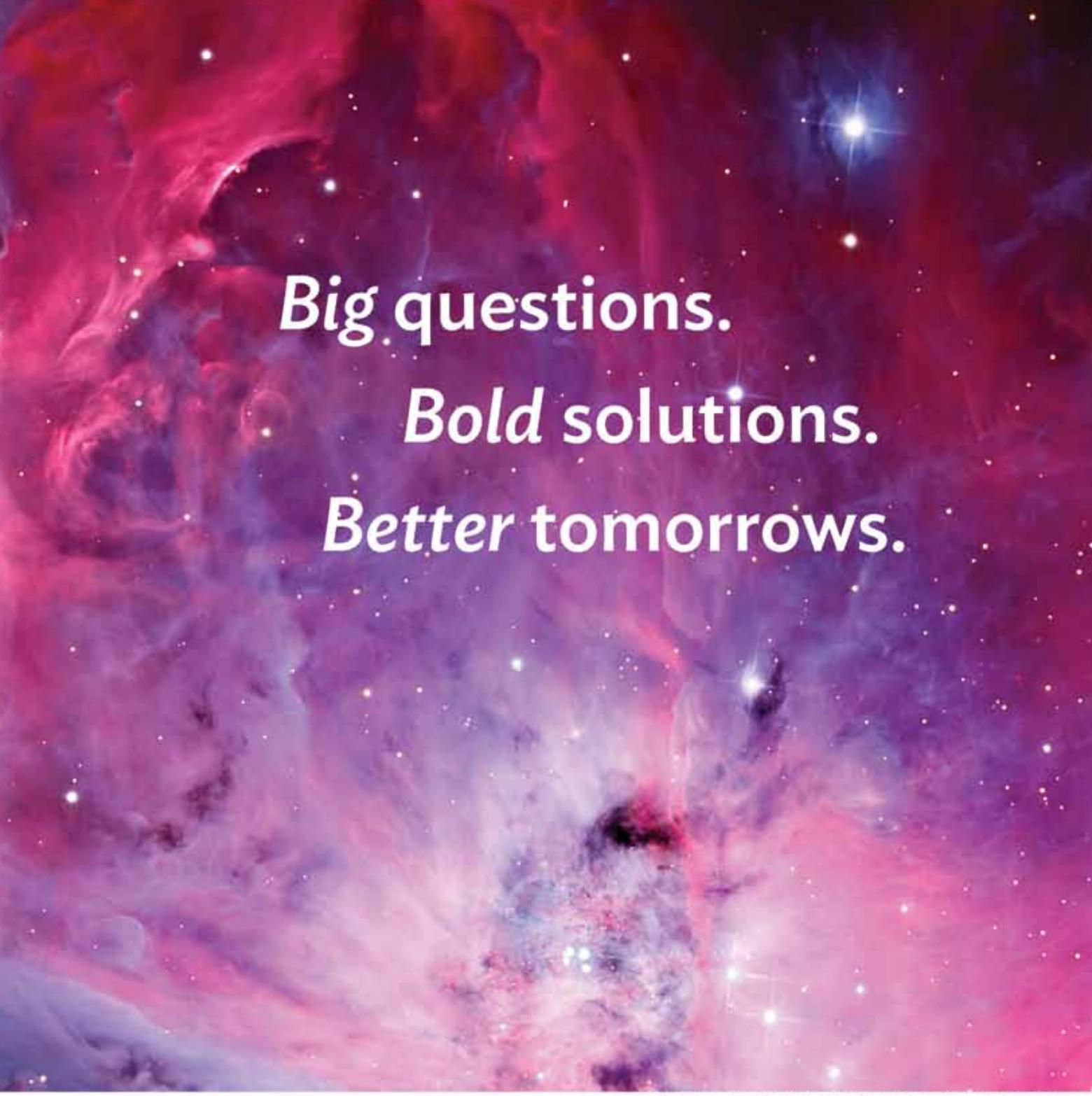
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## *Tucson: One of America's Most Innovative Cities*

In May, 2010 *Forbes* ranked Tucson one of America's most innovative cities. The publication's formula used number of patents granted and venture capital invested per capita combined with the ratio of high-tech and science jobs to total employment. Tucson ranked 19 of the 100 largest U.S. communities studied.

Tucson has a lot going for it. UA is one of the great research universities in the country. Every day innovative ideas related to renewable energy, optical physics, and bio-science – to name a few – are spawned in campus laboratories and classrooms. These are matched by ground-breaking private R&D throughout our community.

Tucson is home to Eller's McGuire Center for Entrepreneurship, a recognized leader in equipping tomorrow's business leaders to identify and assess opportunities while transforming technologies into innovative goods and services that create economic value.

Every day the professionals at BeachFleischman have the privilege of working alongside clients who are some of our nation's most innovative entrepreneurs. Twenty-plus years of experience have taught us that leaders of start-up and fast-growing enterprises need tailored services that help them:

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Five shareholders formed BeachFleischman in Tucson almost twenty-two years ago. Today the firm has 19 shareholders, 45 CPAs and almost 100 professionals. BeachFleischman is southern Arizona's largest locally-owned accounting firm and a top 200 CPA firm nationally as measured by *Accounting Today* magazine. We also offer a full-service Phoenix office.

We salute the spirit of innovation and entrepreneurship that fuels Arizona's economic growth.

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Rusing Lopez & Lizardi, P.L.L.C. is proud to announce its new name as the firm celebrates its 20th anniversary as one of Tucson's most dynamic business law firms. Founded in 1992 as Rusing & Lopez, P.L.L.C., by Stanford Law School graduates Mick Rusing and Pat Lopez, the firm has grown steadily throughout the years. The firm recently added six prominent and talented lawyers who bring expertise in the areas of intellectual property, technology, gaming and construction law. With these additions, Rusing Lopez & Lizardi has one of the most experienced and knowledgeable intellectual property and technology practices in Arizona. To accommodate the growth, the firm recently moved into a new building. Please note the new address below.

Rusing Lopez & Lizardi represents its clientele (including major international, national and local enterprises) in virtually every aspect of the law. Its trial practice focuses on broad areas of complex business litigation. The firm's commercial transactional practice covers all business and corporate related areas, including a large real estate practice.

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# Powering an Entrepreneurial

The economic engine of the future will be knowledge-based and driven by entrepreneurs developing new ideas.

Unlike natural resources which are not renewable, or construction that depended on escalating population growth, ideas are inexhaustible.

In 2009 we established a task force of 23 leaders to develop recommendations for a new economic engine – the Entrepreneurial Economy for Tucson.

The imperative was how to grow an economy based on scalable and very rapidly growing knowledge-based businesses. Such companies – often called “gazelles” by economists – have been the economic engine of growth for high-performance regions including greater Boston, Silicon Valley, the Mid-Atlantic corridor and, more recently, Austin, San Diego, North Carolina’s

Research Triangle and Florida. Currently in Cambridge, Mass. there are more than 1,000 startups, including 200-plus companies in the Kendall Square incubator alone. This must be the direction of our future.

None of these regions prospered simply by incenting existing companies outside the area to relocate or locate new facilities in their region. In each case the biggest employers have been home-grown.

We’ve already seen the powerful impact of homegrown gazelles in Tucson, including two garage startups – Burr-Brown, now Texas Instruments, and Ventana Medical Systems. Such global gazelles have been the exception in Tucson.

The task force included TREO, the University of Arizona McGuire Center

for Entrepreneurship, UA Corporate Relations, Desert Angels, Solstice Capital, Hecker & Muehlebach and others who came together to build awareness about the importance of an entrepreneurial economy for Tucson.

The task force gathered and interviewed 14 local entrepreneurs who successfully built idea-based scalable businesses in Southern Arizona. They shared the challenges, opportunities, strengths and weaknesses of the Tucson region which they encountered while launching their companies.

We assessed what Tucson is already doing right to help our gazelles and what can be improved. We established strategies to encourage the formation and success of such rapidly growing, scalable knowledge-based companies.

The Entrepreneurial Economy for



Photos: BalfourWalker.com

# Economy

By Harry A. George

Tucson Task Force Recommendations published here can nurture an ecosystem that provides entrepreneurs the best environment in which to launch their companies

The new economy – and it is already in evidence here – is driven by ideas. Knowledge-based businesses pay higher wages. They value education and vote for it. Knowledge-based businesses leave a lighter environmental footprint on the desert. Many compete globally the moment they ship their first product.

Tucson's gazelles are already selling to customers outside of Tucson both nationally and internationally and bringing wealth back to Tucson just like the ships that sailed out over the Mediterranean and brought the fabulous wealth back to Venice. In those days,

trade required sea lanes and a port; fortunately for Tucson, that is no longer true.

We already have a strong base for this new economy – including the University of Arizona, one of the top research universities in the nation, and large technology-based companies including Raytheon Missile Systems, IBM, Ventana Medical Systems, Honeywell, Sanofi and others that routinely spawn new ideas and leaders for potential gazelles. Moving forward, it is crucial that we are responsive to the needs of these employers so that they can continue to prosper here. Many of the needs of these existing employers are the same as the needs for our entrepreneurial economy.

The essential ingredients for entrepreneurial businesses are ideas, edu-

cation, talent and capital. Tucson's strength is ideas.

However – to succeed – we must remedy deficits in education, C-level talent and capital.

The purpose of the Task Force's report is to create a “convening vision” for Tucson's Entrepreneurial Economy – a vision that will motivate stakeholders of Tucson and Southern Arizona and lead to action.

Harry A. George is Chair of the Entrepreneurial Economy for Tucson Task Force and Managing General Partner of Solstice Capital.

Biz

# Entrepreneurial Economy for Tucson Task Force

In 2009, a task force including TREO, the University of Arizona McGuire Center for Entrepreneurship, UA Corporate Relations, Desert Angels, Solstice Capital, Hecker & Muehlebach and others came together to create awareness of the importance of an entrepreneurial economy for Tucson. The resulting Entrepreneurial Economy for Tucson Task Force Recommendations were developed to encourage an ecosystem that will provide entrepreneurs the best environment in which to launch their companies.

The development of this report involved contributions by the following people and others.

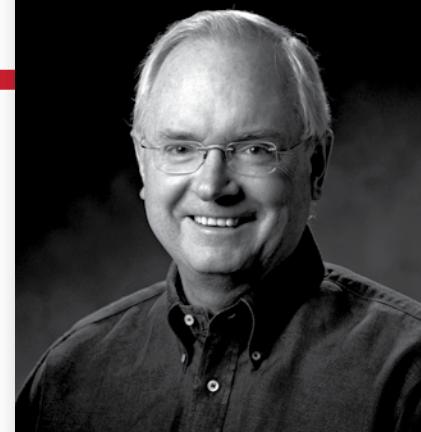
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Photo: BalfourWalker.com



# Harry George Practical Visionary

By Gabrielle Fimbres

Harry George helped launch 60 companies – so far.

George brought his venture capital vision to Tucson 1991, where he's invested in and mentored numerous startups. He's a co-founder of Desert Angels, one of the largest and most active networks of private investors in the United States.

He led the Task Force that produced this special BizTucson report – Vision for Tucson: Entrepreneurs Power New Economy.

George has nearly 40 years of experience in establishing, operating and investing in successful rapid-growth technology-related companies. He is an investor in SynCardia Systems, maker of the only artificial heart approved by the FDA, High Throughput Genomics (now HTG Molecular Diagnostics) and Medipacs among others. He does know how to pick 'em.

George co-founded Solstice Capital in 1995, a venture capital fund investing in early stage lifescience, information technology and clean tech companies. The first fund invested in 21 companies, including E-Ink, the company that developed the technology used in the Amazon Kindle. He's currently managing the second Solstice fund of \$57 million, which has invested in a total of 23 companies since inception.

From 1981 to 1989, George was co-founder, director and VP of Finance for Interleaf, a pioneer in electronic publishing that grew to be a publicly traded company with \$100 million in annual revenue and 800 employees. In January 2000, Inter-

leaf was acquired by Broadvision in a stock merger that valued Interleaf at approximately \$1 billion. Before that, George was a co-founder, director and VP of finance for Kurzweil Computer Products, subsequently purchased by Xerox Imaging Systems in 1980. George has been a director of 26 private and public companies.

In 1991, he moved to Tucson from Boston after falling in love with the desert, which led him to serve seven years as trustee of the Arizona-Sonora Desert Museum, then six years as co-chair of the museum's Treasure of the Desert Capital Campaign. Since 2006, he's been a trustee of the Tucson Museum of Art where he is serving as treasurer.

He has vision and he leads.

George is a director of AdiCyte, Calimmune, HTG Molecular Diagnostics (where he serves as chairman), Lumidigm, Medipacs, POST, BID.SHIP, REhnu, SynCardia and Temprronics.

He's also contributed his insights to the Arizona Venture Capital Conference and its successor Invest SW, Arizona Technology Council, Arizona Ventures Capital Association, BIO5, Pima County Bond Advisory Committee, Rocky Mountain Venture Capital Association, Southern Arizona Leadership Council, the University of Arizona Eller School of Business and the Arizona Center for Innovation.

See BizTucson Profile,  
"Wild About Harry," Summer 2009,  
[www.biztucson.com](http://www.biztucson.com)

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# Vision for Tucson: Entrepreneurs Power New Economy

By the Entrepreneurial Economy for Tucson Task Force

## **Arizona Pioneers Lay Groundwork for Entrepreneurial Culture**

From the mid-19th century through the immediate post-World-War-II era, Arizona school children were taught the five Cs – Copper, Cattle, Cotton, Citrus and Climate – for good reason. These Cs were the driving force behind the state's economy. These land-based resources propelled vibrant growth of Arizona's towns and communities during this period, providing jobs, opportunities and prosperity.

For the last 50 years, Arizona's growth has been primarily fueled by real estate, driven by in-migration. From the mid-1950s Phoenix grew from 529,000 to 4.4 million people. Tucson grew from 197,000 to nearly one million – dramatic population growth – spurred by air conditioning, air travel and the interstate highway system.

In its early days, broadcast television had a catalyzing impact as well, romanticizing the Western culture. Real estate created the economic foundation for Arizona's other service and consumer-goods industries. Key examples include automobile sales, construction, banking and other financial services, medical and health care services, retail sales and government.

However, just as the previous era ended, the period of economic growth driven by real estate has also ended. Net in-migration to Tucson went deeply negative during 2009 and 2010 and is expected to average less than 15,000 per year going forward for the rest of the decade. Net in-migration of 15,000, as a percentage of the current nearly 1 million population base, cannot sustain healthy, prosperous growth.

## **Next Economy is Knowledge-Based**

What is next? The next economy is knowledge-based – and it is here. An economy based on agriculture, livestock and mining is rooted in land and natural resources, and is thereby inherently limited. A knowledge-based economy is completely different. Ideas are inex-

haustible. Today's most successful companies are based on ideas, are rapidly growing, are scalable, and access global markets. Simply put, they create jobs, new wealth and prosperity.

Building companies based on ideas requires entrepreneurs.

Entrepreneurs are pioneers. Risk takers. Visionaries who see possibilities overlooked by others.

These qualities should sound familiar. Historically, Arizona's early mining companies were led by such entrepreneurs. No one is more entrepreneurial than a cattle rancher or farmer in the desert. Arizona's real estate industry is also infused with risk-taking, visionary entrepreneurial leaders.

“This is the best vision statement/assessment I've seen for Tucson. Great information. Solid recommendations.”

– Marshall Vest,

Director, Economic and Business Research Center,  
UA Eller College of Management

For example, in the 1880s, two New York-based metal traders – William Dodge and Anson Phelps – formed Phelps Dodge and began to acquire promising mining properties in the wilds of the Arizona Territory. This visionary team hit the Atlanta lode in 1884, which laid the groundwork for the scale and success of Phelps Dodge today, one of the largest mining companies in the world. The company is a \$12 billion enterprise and produces 30 percent of the copper in the United States.

Other enterprising entrepreneurs worked with scientists from the University of Arizona to genetically enhance Pima cotton, long considered a superior blend and one of the world's finest grades of cotton used to make smooth,

soft and durable clothing, as well as luxurious sheets, towels and other goods. In the 1950s, UA scientists were successful in making Pima cotton even softer, more durable and more absorbent. Recently, researchers from the College of Agriculture and Life Sciences and the BIO5 Institute created biotech or Bt cotton that incorporates a Bt toxin, a natural insecticide that allows growers to keep yields high and use less pesticide. Grown in Arizona since 1996, Bt cotton now represents more than half of the state's 256,000 acres of cotton fields, protecting them from pink boll worm caterpillars which live inside the cotton boll and can destroy the crop.

Entrepreneurship is also the catalyst for the real estate sector. Pioneers such as Roy Drachman, Don Diamond, Bill Estes, Jr. and brothers George and David Mehl pursued opportunities in residential and commercial real estate and the hospitality industry that have provided jobs and economic opportunity for decades.

Beginning in the late 1970s, Don Diamond acquired 300 acres in the Catalina Foothills. Initially Diamond intended to develop this for resort living and golf, but later decided to repurpose the land for 300 high-end home lots. By 2010, the lots had sold for more than \$100 million.

Tucson's special lifestyle and unparalleled natural beauty inspired the Mehl brothers to build La Paloma and Bill Estes Ventana Canyon resorts that have been mainstays of what has perhaps been our most stable and resilient industry — tourism and area visitors. Decades earlier, Isabella Greenway foresaw the future and founded the Arizona Inn which attracted hundreds of thousands of visitors (and their dollars) to our community. These visionaries saw opportunities, and, despite the warnings of skeptics, took risks. The community prospered.

As important as these natural-resource-based businesses have been and will continue to be, they alone will not be the future economic drivers of growth in Arizona.

# Startups Power New Economy

by Teya Vitu

High-tech and other startup companies are the only way to create future economic prosperity for Tucson.

Forget about the traditional five C's that common lore thinks drives the Arizona economy, said Harry George, managing general partner of Solstice Capital, the only institutional venture capital firm in Tucson. Startups are our future.

Cotton, citrus, climate, copper, cattle were the economic engine for the first half of Arizona's statehood, but no more – and not for a long time.

"The fundamental idea is the five C's hasn't been true for 50 years," George said. "Rapid population growth will not be the economic driver of the future," George declared. "You have to be building your own companies. No region has ever grown its high-tech economy by recruiting companies. They built their own. We have to do that here."

That's how Detroit got the auto industry, why Microsoft and Boeing are in Seattle and why Silicon Valley is where it is. Those guys all grew up in those respective cities.

Home grown. That's what it's all about. That's what high-tech startup companies do.

Economists like to call them gazelles – leaping ahead, powering the future.

Burr-Brown (today's Texas Instruments) and Ventana Medical Systems (now part of the Roche Group) both started in guys' garages. Hughes Missile Systems (today's Raytheon) was pretty much a Tucson startup.

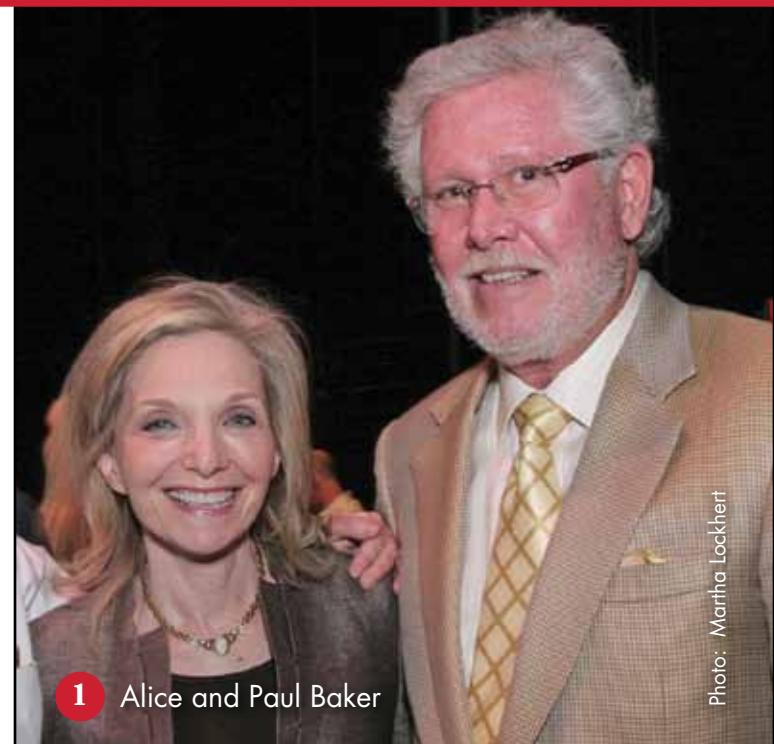
Some people think Tucson is great because we have those three giants. Not Harry George.

"We have three global powerhouses, but our goal should be to have ten in the next decade," George said.

In this issue, BizTucson takes a look at several Tucson high-tech startups – some mature and thriving, others just starting to get products to market and some still not much beyond a desk and chair.

Ever more startups are needed to grow this region's solid modern economy.

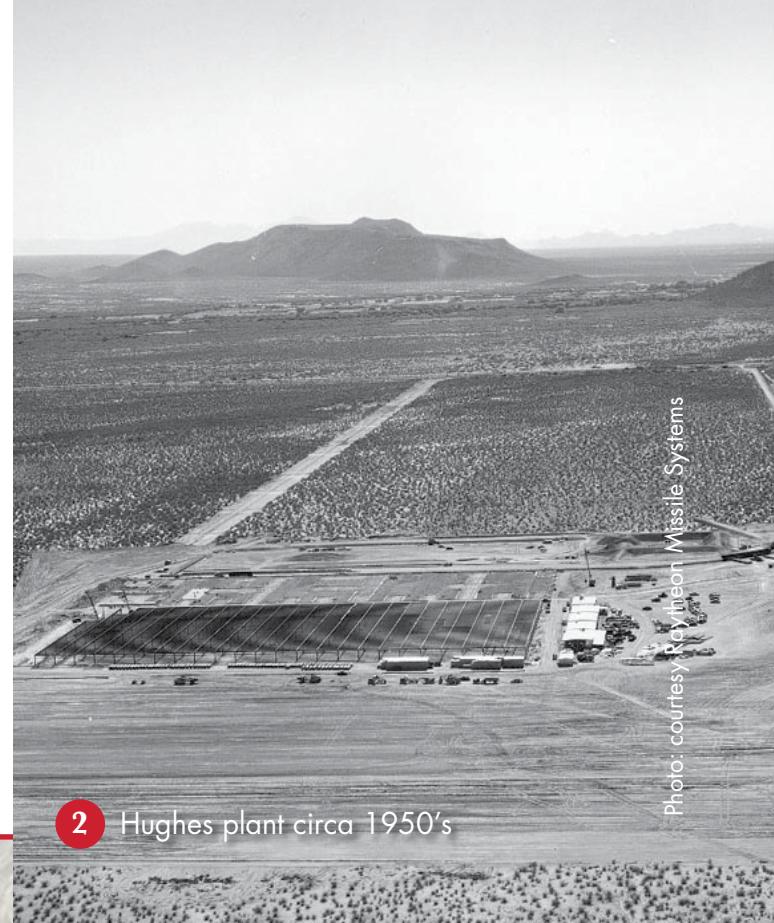
Any one could be the next Ventana Medical Systems.



1 Alice and Paul Baker

Photo: Martha Lockhart

{ **gazelle** |gə'zel|  
noun (pl. **same** or **gazelles**)



2 Hughes plant circa 1950's

Photo: courtesy Raytheon Missile Systems



Don Diamond

1

entrepreneurs and innovators working together to create and grow scalable, idea-based companies – leaping ahead, powering the future.

3

Thomas R. Brown  
Founder, Burr-Brown

## Eight Early Gazelles

In Southern Arizona, our economic prosperity now needs to be driven by human and knowledge-based assets – entrepreneurs and innovators working together to create and grow scalable, idea-based companies. We call them “gazelles.”

This economic transition in Southern Arizona actually dates back to that early post World War II era when gazelle-style companies began reaching global markets. Here are eight examples of eight extraordinary Tucson gazelles.

### 1. Arizona Mail Order

Old Pueblo Traders had humble beginnings in 1947 as a direct-mail merchant of moccasins and squaw dresses through select-space ads in national magazines. By the time Paul and Alice Baker and partner Don Diamond acquired Old Pueblo Traders in the 1970s, its employees numbered in the teens and operated out of 3,000 square feet of flex space on South Country Club. After it was purchased as Old Pueblo Traders and the owning entity created by Donald Diamond & Paul Baker became Arizona Mail Order, AMO focused on marketing women’s fashions and shoes through a variety of print catalogs, including Old Pueblo Traders. All major functions of the business were conducted in Tucson – including management, catalog creation, purchasing, warehousing and distribution. AMO’s growth forced a move to custom-built space on East 34th Street in the early 1980s with periodic expansions to more than 400,000 square feet. The company was known for taking exceptional care of its family of employees (which eventually grew to over 1,200) and generous support of the Tucson community. At the time of its sale to Fingerhut in 1998 it was reported to have revenues in excess of \$140 million annually and more than 1.6 million customers in its database.

### 2. Hughes Missile Systems

Hughes Missile Systems, a division of California-based Hughes Aircraft, was brought to Tucson by the legendary entrepreneur Howard Hughes in 1951. In 1997, Hughes Missile Systems was acquired by Raytheon Missile Systems, which today, as the largest employer in the region, employs more than 11,500 people. The company’s products and services serve global markets that demand continuous innovation. The division’s revenues in 2010 exceeded \$5.7 billion.

### 3. Burr-Brown Research Corporation

Burr-Brown Research Corporation was started in Tucson in 1956 by local entrepreneurs Tom Brown and Robert Page Burr. Over the next 40 years it grew out of Tom Brown’s garage to more than 1,500 employees. In 2000, annual revenue was \$291 million. It was sold that year to Texas Instruments for \$7.6 billion. Burr Brown reached this successful outcome by constantly innovating and bringing new products to the electronic components market. Burr Brown’s customers were the largest electronics manufacturers in the world.

*continued on page 114 >>>*

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The biggest problem for gazelles in this region is a lack of venture capital.

## 4. Buffalo Exchange

Buffalo Exchange was opened in 1974 in Tucson by Kerstin and Spencer Block. Heralded as among the first to buy, sell, trade and take clothing items and accessories on consignment, Buffalo Exchange is a model entrepreneurial firm. Today it has 45 locations in 15 states and more than \$60 million a year in revenue. Kerstin Block has been recognized by Ernst & Young as an Entrepreneur of the Year. Business model innovation, lifestyle and social purpose are keys to this highly successful, non-technological, scalable national enterprise.

## 5. Canyon Ranch

Canyon Ranch, established in Tucson in 1979 by Mel and Enid Zuckerman, achieved a reputation as the most respected and admired destination resort spa in the world. It is consistently ranked as one of the world's top vacation resorts with the greatest range of healthy options anywhere. Canyon Ranch's success and numerous awards stem from a commitment to bring innovation to health, wellness, holistic and integrative care. Today Canyon Ranch is an empire, with \$150 million in annual revenue, two resort spas, three SpaClubs, plus Canyon Ranch Living Condo complexes in Tucson, Miami Beach and Chicago.

## 6. Ventana Medical Systems

Ventana Medical Systems was founded in 1985 by Dr. Thomas Grogan, a University of Arizona professor and practicing pathologist. Grogan, along with a small team of highly skilled and dedicated doctors, scientists and engineers pioneered the automation and standardization of tissue biopsy testing. Today Ventana Medical Systems (acquired by Roche Group in 2008 for \$3.2 billion) is the world's leading developer and manufacturer of tissue-based diagnostic instruments and tests focused on the detection of cancer. It employs more than 1,100 people at its headquarters in Oro Valley.

4



Kerstin Block  
Founder, Buffalo Exchange

5



Mel Zuckerman  
Founder, Canyon Ranch

Photo: BalfourWalker.com

7



Gerald Tumarkin  
Investor & Former Chair  
CyraCom International

Photos: BalfourWalker.com

**From the moment a "gazelle" delivers its first product or service, it is competing nationally and globally. Every sale outside the region brings new money to this region.**

## **7. CyraCom International**

CyraCom International was founded in Tucson in 1995, and has become one of the leading providers of over-the-phone interpretation serving healthcare providers, Fortune 500 companies and government. Jeremy Woan was appointed CEO in 2008. Since then the company has more than doubled its revenues to more than \$40 million and today has 400-plus employees in Tucson as well as facilities in Phoenix and Las Cruces. "In the early years, when the company was growing, Gerald Tumarkin was the driving force in keeping the company alive financially and operationally. Holualoa became a major investor in 2001, thanks to the vision that was conveyed to us by Gerry," stated I. Michael Kasser, president and CEO of Holualoa Properties.

## **8. Providence Service Corporation**

Providence Service Corporation was founded in 1997 in Tucson in response to increasing governmental initiatives to privatize human services and capitate healthcare. Providence specializes in providing direct services and case management in 41 states and Canada and now serves 62,200 clients. Providence's client base includes children, adolescents and young adults with behavioral health needs. Today, Providence generates \$1 billion in revenue and has 11,000 employees.

**The commonality among these companies is clear. They are all successful, knowledge-based, rapidly growing, scalable companies based and flourishing in Southern Arizona. They are all gazelles. Not all gazelles are technology companies. All are innovative and scalable businesses that can sell their products nationally and globally.**

Biz

Photo: BalfourWalker.com

Photo: Courtesy of: CyraCom International

6

Thomas Grogan, M.D., Founder,  
Ventana Medical Systems

8

Fletcher McCusker  
Founder, Providence Service Corp.

7

Jeremy Woan, Chairman &  
CEO, CyraCom International

Photo: ChristopherWomble

# Current Landscape: Strengths, Challenges, Opportunities

By the Entrepreneurial Economy for Tucson Task Force

The Entrepreneurial Economy for Tucson Task Force convened 14 entrepreneurs who have successfully built idea-based, scalable businesses in Southern Arizona. These entrepreneurs shared the challenges, opportunities and strengths/weaknesses of the Tucson region that they encountered in starting and growing their companies. Clear themes emerged from these discussions – Ideas, People, Capital and Culture. Here is a compilation of their insights and observations.

## Ideas

Ideas are the bedrock strength of Tucson.

In 2010, Forbes ranked Tucson as the 19th most innovative city in the United States.

The key to this high ranking is the University of Arizona. The UA is a research powerhouse, one of the top 20 research universities in the United States. It ranks #1 in National Institutes of Health grants in the physical sciences. It's also home to world-class leadership in the areas of Optical Sciences, Information Technology, Bioscience, Agriculture, Aerospace/Homeland Security, Environmental Sustainability/Solar, Engineering, and others. All of these generate breakthrough technologies and proprietary intellectual property, driven by scientific discovery and invention.

Beyond the university, simple proximity has great benefit. Even when companies are based on ideas not developed at the university, it is likely that they are located in Tucson because of the useful resources of the university. The region's large private-sector companies are also a strong source of technological innovation, innovative people and executive talent. The large technology-based companies in Tucson – including Raytheon Missile Systems, IBM, Ventana Medical Systems, Honeywell, Sanofi and others – routinely spawn new ideas and leaders for potential gazelles.

Institutes and organizations that specialize in convening and collaborating to advance innovation add a

unique and powerful level of new-idea generation. Examples of these boundary-spanning organizations include university and non-university entities – including Research Corporation for Science Advancement, C-Path, Science Foundation of Arizona, Research Corporation Technologies, BIO5, Solstice Capital, Arizona Cancer Center, Desert Angels, Arizona Technology Council, College of Optical Sciences, Arizona Center for Innovation, DesTech, University of Arizona Medical Center and UA Health Sciences.

## People

Unlike small businesses, gazelles usually require experienced C-level executives – CEO, VP R&D, VP Marketing, VP Sales and CFO – from inception. Seasoned management is not only necessary to run these high-growth companies, but to get requisite funding.

Recruiting C-level executives is a significant issue in Southern Arizona for two reasons. First, Tucson has not yet reached

critical mass in terms of the number of gazelles located here, so companies often need to bring in talent from outside the region. Second, it is difficult to recruit this level of leadership to Tucson. The predominant reasons cited by many for this are the ranking of Arizona's K-12 education, perceptions of border crime, limited opportunities for trailing partners, a less vibrant city center than some competitive cities, a relative lack of public transportation and air travel, and limited employment opportunities in Tucson for the executive if the startup fails.

It is important to note that for many of these topics cited, there was often a mirror-view presented. For example, although direct flight options are limited, TIA is a small, convenient airport that many people prefer. While K-12 education is a challenge, there are, in fact, excellent K-12 schools in Tucson, including two high schools ranked in the top 50 in the U.S. The quality of life that

## Insights from Tucson Entrepreneurs

### Entrepreneurial Focus Group

- Mark Banister, Medipacs
- Kerstin Block, Buffalo Exchange
- Robert Dorr, Amplimed
- Brad Feder, Simply Bits
- Charlie Horn, ScriptSave
- David Mackstaller, SynCardia
- John Madocks, General Plasma
- Tarek Makansi, Tempronics
- Dewey Manzer, BioVigilant Systems
- Fletcher McCusker, Providence Service Corporation
- Bruce Seligmann, HTG Molecular Diagnostics
- Corey Smith, bioVidria
- Jake Stephens, US Solar
- Michael Voevodsky, Salutaris Medical Devices

# Strengths & Challenges

Here are the key strengths and challenges in the Tucson region as identified by the Entrepreneur Focus Group:

## Strengths

- University of Arizona
- Quality of life
- Vibrant arts community
- Desert Angels (seed capital)
- Stability of team once put together (not likely to be recruited to another local company)
- Cost of living
- Cost to start company
- Arizona Angel tax benefits
- Local engineering and scientific talent
- Education (some outstanding K-12 schools)
- Community Investment Corporation
- Community of retired C-level executives

## Challenges

- Very low level of regional venture capital
- Maintaining the momentum in creating a vibrant downtown
- Relative lack of public transportation and limited air routes into Tucson
- Attracting people here, particularly experienced high-level executives
- Negative perception of K-12 education
- Relative lack of quality large-scale conference space in Tucson
- Perceived lack of a business-friendly attitude in city services
- Limited media interest in entrepreneurial activity and success
- Existing resources not always easily accessible – many players, no central coordination
- Keeping strategic talent in Tucson (MBA program graduates)

*continued on page 118 >>>*

continued from page 117

Arizona's first two attempts to use public funds to form a Fund of Funds failed in the State Legislature. The third attempt to create a Fund of Funds – this time using only private funding – is on-going, but struggling to find Arizona-based investors willing to invest.

So, to date, Arizona has never had a Fund of Funds. Arizona must eventually succeed in this effort in order to be a competitive entrepreneurial economy state.

Another challenge is that local banks do not offer traditional venture-lending products like those offered by Silicon Valley Bank and its competitors (none of whom have offices in Southern Arizona).

## Culture Strengths

Tucson's crisp high-desert air, sunny climate, lack of natural disasters and exceptional air quality make Tucson the picture of health and a healthy lifestyle. The culture is a unique blend of Western, Mexican and Native American influences. Tucsonans enjoy everything from symphonies to rodeos, modern art

to mariachis.

The intriguing landscape of the desert gives way to majestic mountains in every direction, making Tucson a paradise for anyone who loves the outdoors. Hiking, biking, golf and exploring are favorite activities as the sunny weather keeps Tucsonans outdoors year round. Golfers enjoy some of the finest courses anywhere, from challenging target golf to traditional layouts. Tucson hosts the Accenture Match Play Championship, the cornerstone of World Championship Golf. Tucson was the second-best midsized cycling city in the nation according to Bicycling magazine in 2006. Many locals join visiting cyclists from all over in the El Tour de Tucson, the nation's largest perimeter cycling event.

When Tucsonans aren't out participating in their favorite activities, they can choose from a variety of spectator sports. The UA is a member of the Pac-12 Conference and the school has teams in all major men's and women's NCAA sports. Men's basketball and women's softball teams have been national champions. AAA and spring

training baseball is a regional favorite.

At more than 600 square miles, metropolitan Tucson is a study in contrasts. Historic adobes are preserved among downtown high-rises, resort hotels are nestled in picturesque foothills, cacti bloom in the center of the city, desert washes flow after occasional desert storms and those who tire of poolside lounging can drive 30 miles up Mount Lemmon to ski in the cool mountain temperatures.

The Wall Street Journal has called Tucson a "mini-mecca" for the arts, and for good reason. It is one of only 14 U.S. cities to have professional opera, symphony orchestra, ballet and theatre companies. A rich cultural heritage combined with a spirit of innovation contributes to a diverse offering of music and arts.

This iconic American desert is highly attractive to knowledge workers. The challenge is to capitalize on this unique asset. Few, if any, communities can offer this quality of lifestyle to the new workforce. The focus-group entrepreneurs agreed that the region's strengths were

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the catalyst for their decision to locate and grow their companies in Tucson.

### Culture Weaknesses

The relative lack of a vibrant downtown and associated lifestyle/cultural amenities represents a major deficiency in building a gazelle firm in Tucson – particularly compared to other cities that Tucson would consider to be ‘peer’ or ‘aspirational’ – such as Austin, Portland, San Diego, Madison, Boston, San Francisco, Chicago or Washington, D.C. To build gazelles, Tucson needs to be able to attract young professionals that could go to work in any of these cities.

Another strong consensus of the focus group was how difficult it is to work with local government. This was especially evident in the areas of building permitting and occupancy issues, parking requirements, and the lack of continuity and consistency in policy and implementation. The group noted that single-issue interest groups in the region do a better job than business at positively influencing local and state policy

decisions. A unified voice to advance goals of rapidly growing businesses is essential.

Other cultural and infrastructure challenges: a low level of media coverage of entrepreneurial stories, a lack of a strong network of and for entrepreneurs, difficulty in identifying and accessing available resources and inadequate public transportation.

### Brighter Future

To some extent the concern about downtown Tucson is a lagging indicator. There has been significant recent progress. In the past 36 months, investment in downtown included \$140 million from the private sector and \$200 million from the public sector.

Two key projects have been transformative – the 4th Avenue underpass which connects the downtown with the very lively 4th Avenue retail corridor, and repositioning the Martin Luther King Apartments into market-rate apartments with street-side retail, which brings more residents into downtown to support numerous new restaurants and

clubs which opened in the past year. Tucson’s downtown is making great strides, yet there is still more to be done.

The next 36 months will see the completion of the \$65 million, 3.9 mile modern streetcar route. The opening of the streetcar in late 2013 will help transform the downtown experience and will connect the UA, Main Gate, 4th Avenue and the downtown’s east side and west end.

Also on the positive side, the UA Arizona Center for Innovation provides emerging entrepreneurs with low-cost lab space, expertise, research, technology and talent. The UA also has the highly ranked McGuire Center for Entrepreneurship that graduates new entrepreneurs, some of whom stay in the region to launch their new ventures. The UA Tech Park, the recently established UA Bio 5 Oro Valley and the UA Bio Park in development augment Tucson’s incubation and other startup resources.

Biz



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# Actions to Stimulate Investment

By the Entrepreneurial Economy for Tucson Task Force

Increasingly, businesses, nonprofits, high-net-worth individuals, the University of Arizona and government leaders are recognizing the importance of capital formation and are taking actions to stimulate investment and startups:

- The Tucson-based Desert Angels is an active source of seed capital. Since its formation in 2000, the Desert Angels has invested more than \$16 million in 50 companies. In the last two years the Desert Angels has invested more than \$6 million in 22 companies.
- Arizona's Angel Investor's Tax Credit was introduced in 2005 to encourage investments in the areas of bioscience and technology, providing incentives for angel investors throughout the state to fund more early stage Arizona companies. A number of Tucson companies have benefitted from this program.
- The Science Foundation of Arizona (SFAZ) was formed to invest in science and engineering, areas of great economic importance to Arizona. SFAZ supports promising research at universities and research organizations and has awarded more than 50 grants ranging from \$50,000 to \$8 million for life science research and more than 15 grants ranging from \$100,000 to \$9 million in alternative energy, among others. The express purpose of these grants is to create technology that can be spun out and commercialized. In addition to life science and alternative energy (with a special focus on solar), the SFAZ also supports research in information and communication technology.
- The Arizona Commerce Authority has recently introduced the Arizona Innovation Challenge and AZ FAST Grants. Last year the ACA granted eight startup grants, each be-

tween about \$150,000 and \$250,000. Six of the eight were Tucson companies. This year the ACA is committing \$3 million in grants annually to Arizona technology companies to help bridge the gap between research and development and commercial launch. The AZ FAST Grant Program began in December 2011. These grants provide seed money to technology-based companies to help initiate the commercialization process. Companies can receive up to \$7,500 for professional consulting services to help bring their product to the next stage of development.

- Conferences like Invest Southwest and Idea Funding were established to connect potential investors with new ventures in Arizona.
- The Bioscience Leadership Council of Southern Arizona (BLCSCA) is dedicated to making Southern Arizona a recognized bioscience center. BLCSCA partners with the Flinn Foundation to implement the Arizona Bioscience Roadmap. BLCSCA undertakes projects and action to stimulate an environment that will lead to the growth of the biosciences – and especially bioscience companies – in our region.
- The UA announced Tech Launch Arizona, which is a restructuring and repositioning of all things related to technology transfer and commercialization at the UA. This restructuring combines the Office of Technology Transfer, Corporate Relations, the Tech Parks and the incubators into one new entity – Tech Launch Arizona – and has them reporting directly to the UA President. The goal is to significantly ramp up spin-out and licensing activities for the UA. This initiative also more closely integrates the universities tech-transfer activities with the successful McGuire Center for Entrepreneurship within the Eller College of Management.



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### Selected Southwest Investments

COMPANY	CURRENT STAGE	LOCATION
AdiCyte <sup>3, 4</sup>	Development Stage	Tucson
Angstrom Pharmaceuticals, Inc. <sup>2</sup>	Pre-clinical	San Diego
CALiMMUNE <sup>3, 4</sup> engineering immunity	Pre-clinical	Tucson
CAREFX <sup>2</sup>	Sold to Harris Corporation	Phoenix
CELLZ DIRECT <sup>1, 4, 5</sup>	Sold to Life Technologies	Started in Tucson
htg <sup>1, 4, 5</sup> Molecular	Growth Stage	Tucson
IMARX PHARMACEUTICAL CORP <sup>1, 4</sup>	Sold to DuPont	Tucson
Lumidigm <sup>2, 4</sup>	Growth Stage	Albuquerque
medipacs <sup>3, 4</sup>	Development Stage	Tucson
POST. BID. SHIP. <sup>3, 4</sup>	Development Stage	Tucson
PHOTOTHERA <sup>2</sup>	In Clinical Trials	Carlsbad
REGENESIS <sup>1, 4, 6</sup> BIOMEDICAL	Growth Stage	Phoenix
REhnu <sup>3, 4</sup> gigawatt scale solar	Development Stage	Tucson
SALUTARISMD <sup>3</sup>	Clinical Studies	Tucson
SynCardia <sup>3, 4</sup> SYSTEMS, INC.	Growth Stage	Tucson
tempronics <sup>3, 4</sup>	Development Stage	Tucson

#### Solstice Capital's or Solstice Capital Partner's role with the portfolio companies:

- 1. Solstice Capital lead or co-lead institutional investor
- 2. Solstice Capital first round institutional investor

- 3. Direct investment of Solstice Capital Partner
- 4. Board Member

- 5. Board Chair
- 6. Co-CEO (2003-2006)

# Creating Entrepreneurial Growth Conditions: Recommendations

By the Entrepreneurial Economy for Tucson Task Force

A groundswell of awareness about the need to create entrepreneurial growth conditions in the United States has already begun. Federal policy and global economics are driving attention, resources and action toward the development of entrepreneurial economies. As this report is being published, countless communities across the U.S. and around the world are investigating how to be prepared regionally to compete globally. The stakes have never been higher. This shift sharply increases the competitive landscape and creates an even more inherent urgency for our region to equip entrepreneurially.

Southern Arizona has history, resources, awareness and intellectual assets. What are the specific actions that will move this region forward economically?

The following Entrepreneurial Economy for Tucson Task Force Recommendations are based on research, focus groups and insights developed over the past three years. This task force reflects the collective vision of 23 members, ranging from individual entrepreneurs and venture capitalists to the Desert Angels, University of Arizona, Pima Community College, Raytheon Missile Systems and TREO.

## Task Force Recommendations for Building an Entrepreneurial Economy

Arizona's future economic prosperity certainly requires continued development of existing and emerging industry clusters for enriched economic diversification. However, the essential dimension that needs to be developed is a thriving culture of entrepreneurship. This requires building and sustaining a more robust pipeline of future innovators, launching more gazelles and keep-

ing them in this region. Tucson must stimulate the development of a thriving ecosystem that supports the entrepreneurs already based here, while also attracting innovative talent from around the globe.

### Overarching Goals for Entrepreneurial Success

The Task Force proposes four overarching goals for capitalizing on regional innovation and creating jobs:

1. Model and advance the regional strategy of growing our own companies as Tucson's primary economic development focus
2. Create and empower an inclusive coalition to drive and lead change
3. Cultivate and sustain an innovation ecosystem
4. Earn the reputation for Tucson as an entrepreneurial hub

"The best time to plant a tree is twenty years ago. The next best time is today." As this Chinese adage implies, these recommendations require a long-term commitment – starting today.

### Actions and Outcomes

#### 1. Grow our own companies

Embrace the goal of growing our own companies as Tucson's primary economic development strategy.

Just as Boston, Silicon Valley, San Diego and North Carolina's Research Triangle did years ago, the Tucson region must collectively embrace an economic strategy for growing our own companies – entrepreneurial ventures of all types, but particularly scalable fast-growing gazelles that can create high-wage jobs and continue spawning new innovation for years to come.

*continued on page 124 >>>*

## New Economic Attitude

Southern Arizona must recognize that a permanent economic shift is occurring and that today our greatest assets are ideas. More and more, the value and content of each product is knowledge, not material.

Globally, land-based and location-based resources are diminishing – as they are in our region – while strengths in innovation and research are increasing. Today in Southern Arizona, the sectors of aerospace, biosciences, optics, defense, medical devices, information technology, solar and other clean technologies employ more than 30,000 and represent 10 percent of the region's non-government payroll.

With this shift comes access to global markets. From the moment a gazelle delivers its first product or service, it is competing nationally and globally. Its competition is not the shop around the corner. Its target customer does not live in Tucson. Every sale outside the region brings new money to this region. New wealth. New jobs. New prosperity.

An expanded and strengthened knowledge-based economy will benefit all segments of our community by creating higher wage jobs across all demographics. A premier example of this is that in 2008, the average salary of employees at the University of Arizona Tech Park was \$85,515 – more than double the Pima County average salary of \$39,973. High-wage jobs translate to enhanced prosperity and a higher standard of living for all community members.

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## Startup Tucson

Startup Tucson has an ambitious agenda. Ongoing projects and goals include developing and hosting a website – [www.startuptucson.com](http://www.startuptucson.com) – and an entrepreneurial social networking platform for use by local entrepreneurs and a growing list of partner organizations. This site will include a wide array of startup resources including:

- Cross-organizational calendar of startup and technology events
- Platform for connection and conversations for Tucson entrepreneurs through social networks
- Listing of co-founder opportunities and jobs at startups
- Directory of partners and other startup resources
- Directory of startups and entrepreneurs
- News coverage of Tucson's startup sector
- Opinion articles from local thought leaders
- Mentors network for connecting startup executives and founders with mentors, especially retired executives from knowledge-based companies with related domain experience

### **Startup Tucson and its partners also will host a number of events:**

- Startup Tucson Weekend – An annual event where entrepreneurs pitch ideas, partner together and launch ventures.
- Startup Drinks – Monthly event where entrepreneurs meet, connect and share over drinks.
- Startup Tucson Roundtable – This is a key recommendation of the task force. The Startup Roundtable will regularly review Tucson startups in order to provide connections, assistance and guidance. The Roundtable, which may meet three or four times a year, should ensure a new level of coordination of area resources to the benefit of Tucson's startups. It is expected that TREO, SALC, Desert Angels, Arizona Venture Capital Association, UA Tech Launch Arizona, AzCI, UA McGuire Center, Pima Community College, the Mayor's office, Pima County, the ACA and local media, among others, will participate. The Roundtable will also reinforce the awareness and importance of Tucson's startups.
- Integrate with and support regional events such as IdeaFunding, Innovation Day, AZBIO and Invest Southwest.

### **Startup Tucson partners already include:**

- Arizona Center for Innovation
- Arizona Technology Council
- Desert Angels
- Downtown Tucson Partnership
- Solstice Capital
- Spoke6
- Startup Drinks
- Tucson Digital Arts Community

Mobilize a regional effort that:

- Changes Tucson's mindset from an economy driven by population growth to an economy driven by the creation of gazelles
- Instills a sense of urgency
- Ensures ongoing collaboration, cooperation and communication among all stakeholders, both public and private

### **2. Create coalition for change**

Create and empower an inclusive coalition to drive and lead change.

Leading change requires confident, experienced and influential people who share a common objective and commitment. Assembling and empowering a guiding alliance of leaders will give the effort structure and strength, building urgency and momentum. These leaders will have the responsibility for building community awareness, appreciation and participation.

To achieve this, the Task Force recommends the newly formed grassroots group Startup Tucson be embraced by established community leaders and organizations, including but not limited to Southern Arizona Leadership Council, Tucson Regional Economic Opportunities, Arizona Venture Capital Association, the University of Arizona, government entities, technology organizations, chambers of commerce and the media.

Startup Tucson was formed to break-down the silos that too often exist in Tucson and become the "connective tissue" of a Tucson startup ecosystem – empowering new entrepreneurs and existing groups to connect with each other. Startup Tucson began in the summer of 2011 to link grassroots entrepreneurial activities to the established leadership, to span boundaries and achieve new economy goals.

### **3. Cultivate and sustain an innovation ecosystem.**

The essential ingredients for new business formation are ideas, education, talent and capital. As noted before, Tucson's strength is ideas. To succeed we must remedy the deficits in education, C-level talent and capital to fuse together all of those essential ingredients.

*continued on page 126 >>>*

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Imago Dei Middle School  
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Lesco Optique  
LuLu Bell Toy Bodega  
Monkey Burger  
Obsidian Gallery  
Peach Properties  
Perfect Pantry  
The Playground Bar and Lounge

Providence Service Corp.  
North Scott Barbers-Salon  
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continued from page 124

ents.

Education: The key recommendation is two words – support education.

The Tucson community must financially underwrite and philosophically endorse public K-12 education reform in a manner that:

- Recognizes its foundational role in social and economic wellness
- Reconciles and aligns long-range community college workforce preparation to be less specific-industry dependent and more nimbly “knowledge worker” talent-development based
- Financially supports university-based knowledge creation and transfer through students, scientific discovery and technological innovation

These are economic cornerstones. State funding and federal research support are a fraction of what they were five years ago. The continued viability of high-end research and education in this region is dependent on significant local financial support.

Talent: Tucson has an abundance of experienced scientific and technical talent, but gazelles also require – almost from inception – seasoned executive talent (CEO, CFO, VP R&D, VP Marketing, VP Sales). This level of talent historically and currently is in short supply in Tucson and generally must be recruited from out of state. The Task Force has identified three elements for improving the talent equation – recruiting, retaining and developing talent.

#### To recruit talent

- Market and promote the region as a great place to create and nurture startups
- Work collaboratively with companies and organizations in Tucson to find positions for trailing partners who will also require employment
- Continue to enhance Tucson so it is a more attractive place to live and work
- Arizona needs to have a reputation of being inclusive of and friendly towards diverse populations and minorities – because they are disproportionately represented as scientists, entrepreneurs and engineers with advanced degrees

#### To retain talent

- Establish an Entrepreneurial Network to connect local executives in a regular forum where they can share stories, ideas, experiences and resources
- Establish a social media platform to connect Tucson startups with experienced executives
- Encourage cross-pollination between companies to facilitate sharing of successful recruitment/retention tactics

#### To develop talent

- Establish mentoring programs matching experienced CEOs and other CXO executives who are in Tucson with local startup executives.

Capital: In Tucson, capital is a structural and probably long-term problem. Even the most promising startups, with

bullet-proof intellectual property, addressing large unmet market needs, and with a superb management team, will need the support of local venture capital and high-worth individuals such as members of Desert Angels, to reach the risk/reward profile that can attract capital from out of state. Particular emphasis should be put on further developing local institutional capital and enhancing relationships with out of state capital.

- Work toward and succeed in establishing a regional Fund of Funds
- Publish a Resource Directory of startup companies with key company data including a list of executives
- Invest Southwest should meet in Tucson every five years
- Support Desert Angels
- Increase community awareness of the economic impact of gazelles
- Encourage local banks to offer financial products tailored to gazelles

#### 4. Become an entrepreneurial hub

Earn the reputation for Tucson as an entrepreneurial hub. Fully capitalizing on the region's entrepreneurial potential will require recognition across local, national, and global communities that the Tucson region is an emerging center for entrepreneurial activity. The power of media, social capital, culture and communication should not be overlooked in their ability to shape the future of a gazelle-based economy. One illustration from the Midwest is the Silicon Prairie News website (<http://www.siliconprairienews.com>) which provides high quality interactive coverage of the startup activity in Omaha, Kansas City and Des Moines.

Specifically the Task Force recommends that Tucson:

- Claim our identity as a startup community by consistent print media education and outreach on unique and interesting startup businesses within the region
- Create opportunities for entrepreneurs to tell real stories in their own words
- Work with local television partners to develop startup-focused programming
- Pitch regular entrepreneur columns to business publications
- Establish a media presence dedicated to local entrepreneurial ventures
- Support the community's focus on downtown development and education
- Use established networks to increase communication of lab space availability

*“For the United States to survive and continue its economic and political leadership in the world, we must see entrepreneurship as our central comparative advantage. Nothing else can give us the necessary leverage to remain an economic superpower.” – Carl Schramm, author of “The Entrepreneurial Imperative”*

## **per·sist·ence** /persistəns/Noun:

1. Firm or obstinate continuance in a course of action in spite of difficulty or opposition.
2. The continued or prolonged existence of something.

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PHOTO: CHRIS MOONEY

# Cancer Prevention Pharmaceuticals

## Colon Cancer Drug in Clinical Trials

By Teya Vitu

The best way to fight cancer is to prevent cancer from getting a foothold in the first place.

That's the ambition for the aptly named Cancer Prevention Pharmaceuticals (CPP), a Tucson high-tech startup company launched in 2008 to develop a drug to prevent colorectal cancer, the third most common form of cancer in men and women.

CPP is about to enter Phase III clinical trials with its first drug, which is designed to get rid of the enzymes and polyamine that help colorectal cancer get started.

"It's the last step of a very long journey to get a drug approved," CEO Jeffrey Jacob said. "If the trial works, then we can file with the regulatory authorities." Jacob estimates the drug could be on the market in 2015.

Eugene Gerner, founding director of the Gastrointestinal Cancer Program at the Arizona Cancer Center, decided to commercialize his research by launching Cancer Prevention Pharmaceuticals in 2008.

So far, it has operated off of \$4.5 million in investor funds, and the company is about launch a \$25 million fund-raising campaign to support the Phase III clinical trials.

"That will keep us going for three years," Jacob said. "We are dealing with a lot of companies interested in partnering with us."

This drug specifically targets survivors of colorectal cancer or those who have a hereditary high risk for developing colorectal cancer. The drug goes after an enzyme that produces polyamine, a protein that is part of the metabolic cycle but also is known to help a colorectal pre-cancer to grow.

"The polyamine is like putting gas on a spark," Jacob said.

CPP developed a two-drug combination therapy, where the first drug takes out the enzyme and the second drug gets rid of the polyamine.

"To make a difference in cancer death rates, you have to do something different," Jacob said. "You need to intervene at earlier points."

The company is seeking approval from both the U.S. Food and Drug Administration and the European Medicines Agency so that the drug can be released in the United States and across the European Union.

The company has five employees but the goal is to increase that to 10 to 12 employees to manage the Phase III trials once the next round of fundraising is complete.

After this colorectal drug goes to market, CPP intends to develop drugs to prevent prostate cancer, breast cancer and skin cancer. So far, all the research has been done at Gerner's lab at the University of Arizona. CPP eventually could have its own labs.

"I'd expect us to have laboratories to work on some of the science and diagnostic aspects and the drug formulation," Jacob said.

For now, he expects CPP will turn to pharmaceutical companies to manage the drug, but he does not rule out CPP manufacturing its own drugs some day.

"All things are possible right now," Jacob said.

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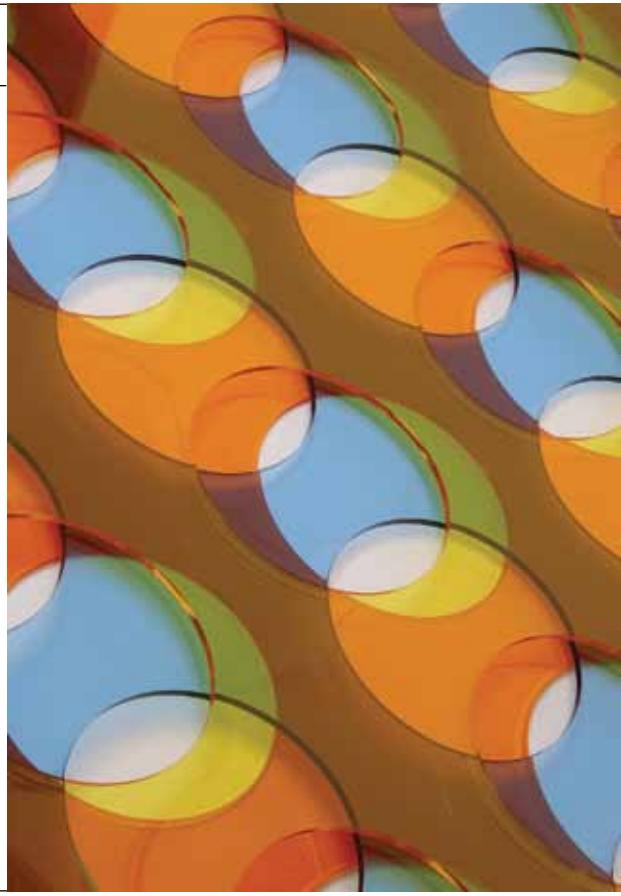
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Ivan Venzin  
Director of Marketing  
CyraCom International



PHOTO: CHRIS MOONEY

# CyraCom Translates to \$50 Million Annually

## Providing Language Interpretation by Phone

By Teya Vitu

Despite a disastrous economy, CyraCom International has experienced blistering growth.

The Tucson-based provider of language interpretation services grew from 443 to 744 employees just since the end of 2010. Revenue more than doubled from \$17.7 million in 2007 to \$37.4 million in 2010, the most recently audited year 2011 revenues will be \$43.7 million and 2012 revenues are expected to be at \$55 million, said CyraCom's marketing director Ivan Venzin.

CyraCom's bread and butter is foreign language interpretation via its blue, dual-handset telephone. One handset, for example, can connect a nurse to a CyraCom interpreter, and the other handset connects a patient speaking a foreign language to the same interpreter.

"In hospitals, they know us as the blue phone company," Venzin said.

CyraCom was a true local startup company launched by Kevin J. Carey and Mark Myers as KevMark Industries in 1995. They received outside funding in 1998 and the company changed its name to CyraCom International.

By 2001, CyraCom still had only 40 employees with just 11 staff interpreters. The rest of the work was done by about 250 independent contractors. Revenue at the time was \$3.3 million, but projections even then called for accelerated growth.

Back then, CyraCom's entire operation was in one smallish office on Oracle Road. That started to change in 2003 when CyraCom opened its first contact center in Nogales, Ariz., for the interpretation staff. The company opened its next contact center in 2006 in Las Cruces, N.M. where about 100 people now work.

The corporate headquarters moved to much more spacious Swan Road offices just north of Sunrise Road in 2005. A Tucson contact center with about 400 employees followed in 2009 near Tucson International Airport, and a third contact center opened in Phoenix in August 2011, where it now has nearly 200 interpreters with intentions to build the staff to 500 "as fast as possible."

CyraCom now is the No. 2 largest over-the-phone interpretation service and the largest one with all its interpreters based in the United States, Venzin said.

CyraCom provides interpretation services in more than 170 languages, with employee interpreters taking the vast majority of calls in the world's most popular languages – Spanish, Mandarin, Cantonese, Korean, Russian, Vietnamese, Arabic, French, Japanese, Korean and Portuguese.

The year 2008 was a bellwether year for CyraCom as Jeremy Woan became chairman and CEO and expanded the company beyond its predominant focus on the health care sector. Woan has diversified the company into banks, insurance, utilities and government services.

"I was very impressed by the company's depth of expertise and experience in health care," Woan said. "But I was concerned that we were missing other sectors representing around 60 percent of the available market for over-the-phone interpretation. So we built a new subsidiary company to expand into those areas while allowing our original business and employees to maintain a health care focus."

The language services industry is on the rise, fueled by growing U.S. diversity and increased regulations. California enacted a law in 2009 requiring health plans to provide language services and American Recovery and Reinvestment Act stimulus funding came with stronger emphasis on enforcing long-existing language services laws for anyone receiving federal funding, Venzin said.

CyraCom believes in keeping its interpretation work in the United States, rather than operating foreign call centers.

CyraCom has also expanded beyond its dual-handset telephones. The company now offer a cordless pair of phones, and translations can actually be provided over any speaker-phone system. CyraCom even has video systems in place in some hospitals. "What we offer now is sign language interpretation," Venzin said.

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PHOTO: CARTER ALLEN

# MSDx

## Commercializing Blood-Test Products

By Eric Swedlund

Formed in 2007, MSDx developed a novel source of biomarkers that reflect the disease activity of a multiple sclerosis patient. An upcoming clinical study will be doubly beneficial. It will not only provide further insights into its blood-test products but also benefit patients and doctors in Tucson.

The company's biomarker tools can be used to monitor patients with MS to determine whether the disease activity is going in the right or wrong direction. That analysis can provide important information to doctors in making treatment decisions, effectively increasing the quality while decreasing the cost of patient care, said MSDx President and Co-Founder Marie Wesselhoft.

The company is focused on commercializing blood-test products for both Research Use Only and In Vitro Diagnostic.

In January, MSDx announced a clinical study in multiple sclerosis with Dr. Jeanette K. Wendt of Northwest NeuroSpecialists. The research will examine how MSDx's blood test can monitor MS patients and detect whether treatments are progressing in the right direction.

"We hope we can recruit these 80 subjects over the next six months," Wesselhoft said. "By the end of the year we should have our data from this study and it will either be part of an FDA submission or help us determine our next clinical study."

Unlike the company's initial study at Barrow Neurological Institute of St. Joseph's Hospital & Medical Center in Phoenix, this study will benefit Tucson patients and doctors.

Last year, MSDx received a \$226,000 Arizona Commerce Authority grant that allowed the company to release its first panel of blood-testing products. That first kit was shipped to Harvard Medical School for use in MS research at the end of January.

The chronic autoimmune disease affects about 2.5 million people worldwide and today there are six FDA-approved MS drugs, representing a roughly \$10 billion market. MSDx will remain active in that area because of the potential for widespread patient care, but the company has expanded its research to develop products that detect and monitor blood-based biomarkers, or proteins, in other neurological diseases, like Alzheimer's and Parkinson's, and in patients with traumatic brain injuries.

"Unfortunately Alzheimer's and Parkinson's don't have good therapies. But biomarkers can be used to help discover drugs," Wesselhoft said.

The MSDx founders came together as part of the McGuire Entrepreneurship Program in the University of Arizona Eller College of Management. The founders went through the curriculum together with MSDx as the project and at the end they launched the company through the business incubator at the UA Tech Park.

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Leah Gomez, Manager of Heart Manufacturing, SynCardia.com

PHOTO: COURTESY SYNCARDIA SYSTEMS

# SynCardia Systems For Artificial Heart, Smaller is Better

By Eric Swedlund

With a smaller artificial heart, SynCardia Systems will be able to reach significantly more patients.

Add in the prospect of the company's artificial heart receiving U.S. Food and Drug Administration approval for implanting in non-transplant candidates and this company can achieve exponential growth, according to SynCardia President and CEO Michael Garippa.

"The smaller heart is the biggest story because it will fit into so many more people than the current heart," Garippa said. "While we've done 1,000 patients over the years, we feel strongly that we would have had 2,000 more patients, had the device been smaller and easier to implant in younger and smaller people. This will give us an opportunity to help a significant number of women, certain ethnic groups and especially child and teenage congenital patients."

"If you couple that with having an imminent approval to do destination therapy, that will mean that people who are not good transplant candidates can have our device for the first time now," he added.

Founded in 2001, SynCardia manufactures the world's only FDA, Health Canada and CE approved total artificial heart. It is currently approved as a bridge to human heart transplant for people dying from end-stage biventricular failure. But Garippa anticipates FDA approval for non-transplant candidates.

"Certain people just do not fit that category. This will give hope for an extended quality of life to a number of patients who would otherwise have been sent to hospice," he said.

SynCardia doubled its sales in 2010 and 2011 and Garippa says optimum conditions will allow the company to grow by another 15 times, ultimately to \$300 million in business annually.

"You never want to drive faster than your headlights, but that's what we could achieve," he said. "There could be some regulatory or technological speed bump that could slow it down, but the only question is whether it's five years, six years, seven years."

Patients who receive the SynCardia artificial heart continue to do better and better on the device. And with the portable driver, patients can now go home from the hospital with the artificial heart, instead of remaining cooped up for weeks or even months while awaiting a transplant.

"We've had a mother go home and raise her one-year old baby, we've had people go back to work, we've had a politician get re-elected – all of this on the Freedom driver – when before that they would've been in the hospital," Garippa said. "It's not just lifesaving. It's quality-of-life restoring."

**Biz**

## Milestone

The 1,000th implant of the SynCardia Total Artificial Heart was performed Feb. 10 at the University of Arizona Medical Center. Since then four more implants have been performed at SynCardia Certified Centers in Germany, France and the United States. There are currently 56 SynCardia Certified Center worldwide.

# CONGRATULATIONS

**Dr. Carolyn Compton**, on your new role as President of the Critical Path Institute.

We salute your leadership and innovation as you continue to strengthen Arizona's bioscience community through the organization's critical work aimed at improving countless lives.

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# EffortlessHR

Web-based Help for Small Businesses

By Teya Vitu

EffortlessHR focuses exactly on what hardly any entrepreneur with a small business has expertise in – all that fun stuff like filling out employee records properly, posting labor laws, keeping time cards, writing employee handbooks, monitoring paid time off – the world of human resources.

That's what Lola Kakes has made a cottage industry out of with her startup company EffortlessHR, an online service that handles most human resource matters except payroll.

Kakes, a former human resources executive, founded EffortlessHR in 2008 after doing five years of consulting work with small businesses.

"I worked with small businesses that didn't know what they didn't know about human resources," Kakes said.

With four employees, Kakes has built a client base of 300 businesses ranging in size from just two to more than 500 employees, but most have fewer than 100 employees.

"Our real user base is companies with 20 to 75 employees because they realize they are starting to need help," Kakes said.



Photos: Balfour Walker.com

EffortlessHR provides more than 300 forms online, and the website is the place where client employees clock in and clock out, track their benefits and request time off.

"I thought there had to be a better way for small businesses to deal with their human resources matters," Kakes said. "I'd like to get to 1,000 clients and see what happens. We are looking to expand."

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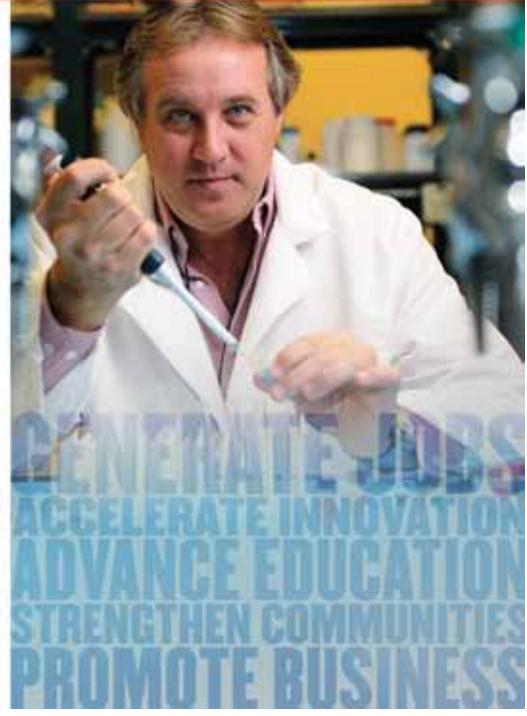
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# Earth Knowledge

## Sharing Information for 2 or 2,000

By Eric Swedlund

Earth Knowledge is focused on how people see and share information – with broadly collaborative capabilities to assist governments, researchers and businesses in making decisions.

Earth Knowledge operates the WISSDOM – World Information Systems Socially Delivered via Online Media – web portal, with its sophisticated and highly customizable data and mapping capabilities. Targeted uses include environmental management, emergency management and military applications.

"The goal of the technology is a very comprehensive web-based platform that brings anywhere from two to thousands of people together and brings large amounts of information," said Earth Knowledge CEO Julia Armstrong D'Agnese. "We can mix and match the kind of content and info we need depending on the type of projects or clients."

"Our technology can be auto-categorized and cross-categorized and mapped – and what that does is allow all of this world information and all of the relationships to be easily accessed. It's a lot of information, but it's very focused."



PHOTO: CHRIS MOONEY

Julia Armstrong D'Agnese and  
Frank D'Agenese Co-Founders  
of Earth Knowledge

Earth Knowledge launched the first version of its portal in 2006 and has produced three different iterations since, working with different clients and adding new tools.

In the last 18 months, the company has transitioned to a web-based system and anticipates continued growth of the platform and increased diversity in its clients.

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# Engineering Synthesis Design

## Interferometry Measures Accuracy of Optical Surfaces

By Eric Swedlund

Manufacturing in the optics industry depends on highly accurate procedures. It's the job of Engineering Synthesis Design to tell companies whether they got it right.

The company's interferometry software and interferometer products examine the surface shape and surface accuracy of optical surfaces – whether glass, molded plastic or metal. The instruments measure accuracy as far as shape and peak-to-valley distances across a surface down to the level of nanometers.

"A major part of our business is useful for astronomical mirrors and mirror segments for telescopes – but the world of optic stretches across many different industries," said CEO Donald A. Pearson II, offering the automotive, semiconductor, aerospace and defense industries as examples.

Known as ESDI, the firm is a leading innovator in the field of surface and wavefront metrology. It was founded in 1996 as a software company whose products would work on any interferometer in the world.

Then users increased in number and liked the software enough to start asking about hardware. So the company morphed into something completely different, delivering the first interferometer systems in 2005.

PHOTO: COURTESY OF ENGINEERING SYNTHESIS DESIGN

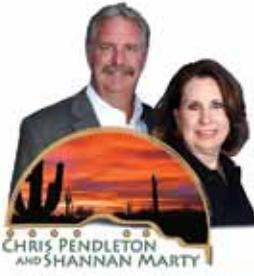


The company grew revenues about 60 percent in 2010 and 30 percent last year. Pearson anticipates growth of about 60 percent this year, in large part because of its biggest new development – an instrument for measuring aspheric surfaces, a booming subsection of the optics industry.

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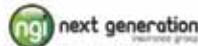
- SNTech, Inc.
- Acquisition of pool and spa division of Regal Beloit Corporation and related financing

**Flypaper Studio, Inc.**

- Acquisition of Flypaper Studio, Inc. by Trivantis Corporation

**Nutri-Vet, LLC**

- Acquisition of Nutri-Vet, LLC by Imperial Capital Group and its portfolio company, Petco Pet, Inc.

**Next Generation Insurance Group, LLC**

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**CAREfx Corporation**

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## Giving Mobility to Artificial Heart Patients

In March 2011, *Fast Company* magazine ranked SynCardia (Tucson, AZ) #20 among the World's 50 Most Innovative Companies for "giving mobility to artificial heart recipients". SynCardia, which produces the world's first and only FDA, Health Canada and CE (Europe) approved Total Artificial Heart, designed and manufactures the Freedom® portable driver, the world's first wearable power supply for the Total Artificial Heart.

For the first time in U.S. history, stable patients without human hearts are leaving the hospital to wait for a matching donor heart at home and in their communities. Weighing 13.5 pounds, the Freedom driver is CE approved for use in Europe and undergoing an FDA-approved Investigational Device Exemption (IDE) clinical study in the U.S.

### Marcela Padilla

- Age: 20 (at implant)
- University of Arizona Medical Center (Tucson)
- Implant: 9/24/10
- Freedom® discharge: 1/20/11
- Transplant: 5/27/11



Similar to a heart transplant, SynCardia's Total Artificial Heart replaces both failing heart ventricles and the four heart valves.

It is the only device that eliminates the symptoms and source of end-stage biventricular heart failure. Worldwide, there have been more than 1,000 implants of the Total Artificial Heart, accounting for more than 250 patient years of life.



The Freedom® portable driver and the SynCardia temporary Total Artificial Heart

Special thanks to Harry George of Solstice Capital for his shareholder support and Board member leadership.

**SynCardia**  
 SYSTEMS, INC.

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 520.545.1234 | [www.syncardia.com](http://www.syncardia.com)

CAUTION — The Freedom® portable driver is an investigational device, limited by United States law to investigational use.



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TO THE TASK FORCE FOR  
DEVELOPING THE ENTREPRENEURIAL  
BLUEPRINT – A ROADMAP FOR  
BUILDING TUCSON'S IDEA-DRIVEN,  
KNOWLEDGE-BASED ECONOMY.

LESLIE P. TOLBERT, PH.D.  
*Senior Vice President for Research*



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# Re: Reinvent The Corner Office

From: **Planning** To: **Innovation**



Venture West knows that the foundation of any successful real estate development begins with ground breaking legal advice. That's why Venture West looks to Lewis and Roca to handle its legal work for Innovation Park in Oro Valley. From real estate, financing, corporate, land use and everything in between, Lewis and Roca gets it done for Venture West.

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