



Building a new Global Innovation Ecosystem in Saudi Arabia: KAUST and its Research and Technology Park

Subtheme 7: The Impact of Science Parks and Areas of
Innovation in an Increasingly Global World

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Areas of Innovation.

April 2016

Table of Contents

- 1 Executive Summary
- 2 Saudi Arabia's Economic Background and Diversification Efforts
- 3 An Overview of KAUST
 - Vision, Mission and Aspirations
 - KAUST Today
- 4 The KAUST Innovation Ecosystem
 - Building on Research and Education as Key Drivers of Innovation
 - Focus on Technology Commercialization, Scale-up and Testing
 - Focus on SMEs as Key Drivers of Job Growth, Innovation and Economic Diversification
 - The Importance of Industry Collaboration
- 5 KAUST Innovation and the Park: Looking to the Future
 - Background on the Park
 - Looking to the Future
- 6 Case Studies: Startups and Key Partnerships
 - Startups
 - i. Sadeem
 - ii. FalconViz
 - iii. NOMADD
 - Key Partnerships
 - i. Saudi Aramco
 - ii. SABIC
 - iii. Saudi Electricity Company (SEC)
 - iv. Dow
 - v. Boeing
- 7 Conclusion
- 8 Appendices
 - Saudi Arabia Fact Sheet
 - KAUST Attributes
 - KAUST Infographics
 - A Map of the Park
 - KICP Members

Executive Summary

An integral component of the mission of King Abdullah University of Science and Technology (KAUST), established in September 2009 on the Red Sea in Thuwal, Saudi Arabia, is to contribute to the economic diversification of the Kingdom of Saudi Arabia and its transformation to a knowledge-based economy. KAUST advances science and technology through distinctive and collaborative research integrated with graduate education for its broad dissemination and benevolent application.

The Innovation and Economic Development Department or 'KAUST Innovation' was established to support the University in achieving this mission.

KAUST Innovation offers a wide array of strategically connected innovation and economic development programs. Its Research and Technology Park ("The Park"), Industry Engagement, Technology Transfer, Innovation Fund and Entrepreneurship Center programs are connecting research and technology to the world and accelerating both early-stage and market-ready technologies.

Unlike many university research and technology parks around the world that were developed in mature ecosystems, KAUST, its Park, and overall innovation ecosystem were created in an emerging innovation environment, an hour away from Jeddah, the closest economic hub, and in a country where the startup and venture capital scene is still very nascent.


In a relatively short time period, this innovation ecosystem at KAUST has produced some impressive accomplishments. For example, as of March 2016, the KAUST Innovation ecosystem has produced 523 disclosures, 341 patent applications, 33 patents, 13 license agreements, 282 industry grad job placements, 194 internships, 36 seed investments, 23 incorporated setups, 38 industry partners, and \$107 million USD in industry-funded projects.

The Park supports KAUST's mission of serving as a catalyst for the Kingdom's economic development.

By establishing a presence at KAUST's Research and Technology Park -- an integral part of the KAUST campus -- companies become an integral part of the KAUST innovation ecosystem and community and gain direct access to the University's laboratories, technology development facilities, faculty and student talent.

The Park provides large companies, as well as small and medium sized enterprises, a gateway for strategic growth in Saudi Arabia and the Middle East.

Overall, KAUST's work-live-play ecosystem, including the Park, are helping to transform knowledge-based industries in Saudi Arabia and making the University a destination for innovators, researchers, academics, entrepreneurs and investors from around the world.



The paper will focus on the key components of KAUST's innovation system, the positive impact of the Park in supporting economic development in the region, and how the University is leveraging these to become a truly global destination.

Saudi Arabia's Economic Background and Diversification Efforts

Saudi Arabia's economy has undergone remarkable changes in a relatively short period of time. It has evolved into a global economic power and G-20 member with modern infrastructure and the largest GDP in the Arab world and Middle East.

In recent decades, the Kingdom has increasingly diversified its economy and now produces and exports a wide variety of industrial products. Saudi Arabia has a population of 27.8 million (over 30 percent are expatriates), a GDP of nearly \$1.7 trillion, and a GDP growth rate of approximately 3.4 percent. Over 40 percent of the population is under the age of 25 years old and is growing by nearly 1.5 percent every year.ⁱ

Since acceding to the World Trade Organization (WTO) in 2005, the Kingdom has started to simplify its regulatory regime, open up key sectors to foreign investment and promote diversification to bolster non-oil industries.

Organizations such as the World Bank have recognized these regulatory efforts, and Saudi Arabia's 'Doing Business Rank,' "which measures the ease of doing business in various countries around the world, continues to improve.

In addition to streamlining regulations and opening up key sectors to investors, Saudi Arabia is also making major investments in the infrastructure and education systems.

Saudi Arabia's Ministry of Economy and Planning, in both its '*9th and 10th Development Plans*,' have highlighted the Kingdom's objectives in 'promoting human development, dissemination of knowledge and expanding available opportunities for community members to acquire knowledge, skills and experience.'

These Plans have focused on improving living standards, increasing employment, promoting economic development and increasing the competitiveness of the country's economy. They have taken a holistic view of 'innovation' that includes promoting entrepreneurship and ongoing education and training as important components that lead to economic diversification and a knowledge-based society.

Saudi Arabia's '*Vision 2030*,' released by Saudi Arabia's Council of Economic and Development Affairs in April 2016, also highlights the importance on education and training, SME development and attracting the best talent to the Kingdom.

An Overview of KAUST

The Establishment of KAUST

KAUST was established in 2009 by Saudi Arabia's late King Abdullah Bin Abdulaziz Al Saud. During its inauguration, King Abdullah compared KAUST to the Bayt al-Hikma or 'House of Wisdom,' the great Baghdad research and education center of the Islamic Golden Age between the 9th and 13th Centuries, situating the new university in the context of Islamic scientific achievement.

The House 'was an unrivaled center for the study of humanities and for science in medieval Islam, including mathematics, astronomy, medicine, alchemy and chemistry, zoology, and geography. Drawing on Greek, Indian and Persian texts, the scholars accumulated a great collection of world knowledge.'ⁱⁱⁱ

King Abdullah mentioned his 'desire that this new University become one of the world's great institutions of research; that it educate and train future generations of scientists, engineers and technologists; and that it foster, on the basis of merit and excellence, collaboration and cooperation with other great research universities and the private sector.'^{iv}

He hoped to create an enduring model for advanced education and scientific research with the aim to ensure its success in promoting the economic development and social prosperity of the people of the Kingdom and of the world.

Vision, Mission and Aspirations

KAUST aspires to be a destination for scientific and technological education and research. It strives to serve as a beacon of knowledge that bridges people and cultures for the betterment of humanity.'^v

Its mission is to advance science and technology through distinctive and collaborative research integrated with graduate education. The University is a catalyst for innovation, economic development in Saudi Arabia and the world, especially in four areas of global significance – food, water, energy and the environment.

As a new institution, KAUST has been purposely designed as a global and private university with several key attributes, including innovation and technology development for public benefit.

An important component is the Park, which is physically and organizationally integrated within the University to facilitate corporate interactions, innovation, knowledge transfer and economic development.

KAUST Today

KAUST today is a thriving community with 901 students, 135 faculty, a workforce of over 2000 and nearly 7,000 members from over 100 nationalities.^{vi}

OUR PEOPLE (Fall 2015)



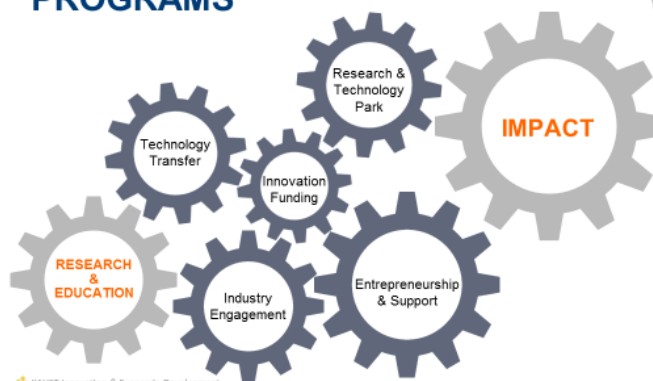
^{vi} Annual Numbers, as of September 2015

The KAUST Innovation Ecosystem

Strategically Inter-connected Programs

KAUST Innovation offers a wide array of strategically connected innovation and economic development programs. Its Research and Technology Park or "The Park", Industry Engagement, Technology Transfer, Innovation Fund and Entrepreneurship Center programs are connecting research and technology to the world and accelerating both early-stage and market-ready technologies.

STRATEGICALLY CONNECTED PROGRAMS



KAUST Innovation & Economic Development



Unlike many university research and technology parks around the world that were developed in mature ecosystems, KAUST, its Park and overall innovation ecosystem were created in an emerging innovation environment, an hour away from Jeddah, the closest economic hub, and in a country where the startup and venture capital scene is still very nascent.

As of March 2016, the KAUST Innovation ecosystem has produced 523 disclosures, 341 patent applications, 33 patents, 13 license agreements, 282 industry grad job placements, 194 internships, 36 seed investments, 23 incorporated setups, 38 industry partners, and \$107 million USD in industry-funded projects.^{vii}

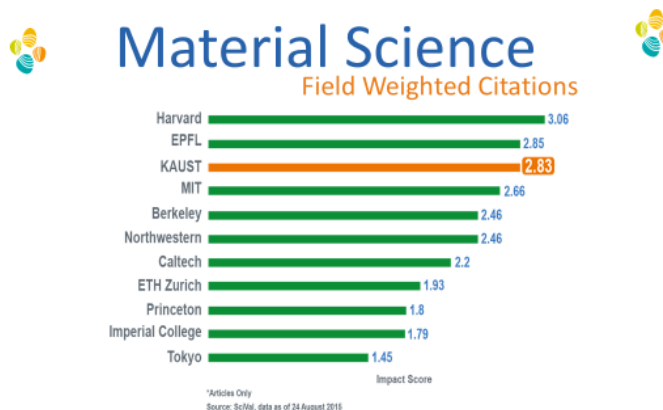
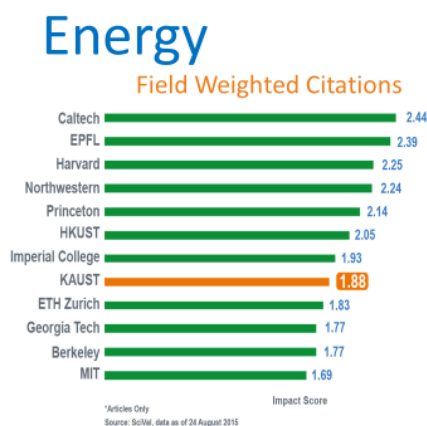
In a short time period, it has certainly contributed to KAUST becoming a global destination.

Building on Research and Education as Key Drivers of Innovation

KAUST focuses on curiosity-driven and goal-oriented research through its three Academic Divisions encompassing multiple disciplines and eleven strategically connected Research Centers.^{viii}

KAUST also has its Core Labs, which are composed of nine laboratories organized around one central mission: to provide state-of-the-art facilities, training and services to KAUST faculty, students, researchers, industry and government partners. These laboratories are a prominent feature of the KAUST interdisciplinary research eco-system, with over 135 permanent staff scientists, engineers, specialists, technicians and administrators.^{ix}

Academically, KAUST citations in materials science and energy publications match top U.S. and European academic institutions.^x



KAUST has a startup rate that matches top U.S. universities, which is a strong performance considering the University has only been open since 2009.^{xi}

The availability of high quality talent and research is a key driver of innovation and a very strong magnet for R&D/innovation driven businesses and start-ups.

Its rich crop of multi-national faculty and advanced-degree students is bolstered by the market opportunity of Saudi Arabia's largest economy regionally. Industry and academia collaborate side-by-side to pursue technological discoveries with some of the most advanced equipment in the world.

This ecosystem includes fostering a culture that celebrates innovation and calculated risk-taking.

Focus on Technology Commercialization, Scale-up and Testing

Through its broad innovation ecosystem, KAUST has been able to engage a large number of companies with the University on many levels such as research collaboration, physical presence at the Park, scaling up technologies, technology demonstration, and licensing technologies.

It also puts a high priority in investing in tools and state-of-the-art indoor and outdoor facilities that accelerate the innovation process.

For example, KAUST Innovation has recently accelerated KAUST technology commercialization efforts through a Proof-of-Concept (POC) Funding Program that includes finalized commissioning of three scale-up labs for catalysts and advanced materials, metal organic frame-works and a kilo lab for fine chemicals.

These programs and facilities allow faculty, students, researchers, entrepreneurs, and partners to initiate proof of concept studies without having to raise additional capital to purchase basic and special lab equipment or to find manufacturing space.

There are also plans to enhance KAUST's outdoor testing facilities with improved solar and agriculture field testing capabilities. This will enable the movement of innovations towards the marketplace by moving them from the lab into field conditions that are more relevant to many market conditions, especially in the Gulf region.

Focus on SMEs as Key Drivers of Job Growth, Innovation and Economic Diversification

A core part of KAUST's strategy to catalyze the economic diversification of the Kingdom is to focus on supporting and growing new start-up businesses and small and medium sized enterprises (SMEs). KAUST aims to enable the creation of start-ups and the growth of SMEs through a broad range of programs and tools from teaching and learning to early-stage funding.

KAUST's Entrepreneurship Center provides a variety of programs that aim to infuse innovation and entrepreneurship in the region and beyond. This includes its New Ventures School where evening lectures and training modules taught by experts including KAUST staff, faculty, international practitioners, and representatives from leading organizations.

It also provides a series of accelerator programs including the New Ventures Accelerator, which apply best practices in Lean, business model and customer development. All types of startup ideas are encouraged to join this program.

The Entrepreneurship Center also organizes the Hikma (Arabic word for wisdom) intellectual property accelerator which helps participating teams explore potential business opportunities based on their ideas, products or services.

KAUST Innovation also supports corporate innovation through the REVelate Program. REVelate is an elite, three-day program that combines elements of innovation, new internal venture creation, team development, business model development and executive education.

These entrepreneurial programs are creating an environment where new ideas can thrive.

KAUST supports innovative ideas and startups with seed funding. The initial seed-funding program has now evolved into the KAUST Innovation Fund, which aims to grow an innovation and technology community and to attract international investors and VCs to the emerging Saudi technology ecosystem. KAUST makes venture capital equity-based investments in high-tech startups from seed (less than \$200,000) to early-stage (up to \$2 million) and becomes a long-term strategic partner of these ventures.

The Innovation Fund focuses on KAUST startups and early-stage companies and international spin-ins – international early-stage high-tech companies interested in establishing R&D activities at KAUST. These early stage companies, with talented founders, can be drawn to the Kingdom through financial investment and the potential collaboration with KAUST faculty, industry partners and the overall innovation ecosystem.

The Importance of Industry Collaboration

KAUST Innovation's Industry Collaboration Program or 'KICP' provides members with exclusive access to the University's research, emerging technologies and thriving network of fellow industry partners.

Creating strong, productive and authentic partnerships with industry based on research is important to support the diversification of the economy in Saudi Arabia.

KICP members get access to a wide range of benefits at KAUST, including the use of pilot testing facilities, early access to KAUST technologies and intellectual property, access to KAUST students for jobs and internships and research collaboration with KAUST and other industry partners in a number of sectors.

To date, there are 38 KICP members. Every year, KAUST hosts an Industry Advisory Board (KIAB) meeting. The objective of the board meeting is to continuously improve KAUST's relevance to industry and to secure the active cooperation and support of industry for KAUST's mission. The 7th Annual KIAB meeting took place in February 2016.

KAUST Innovation and the Park: Looking to the Future

Background on the Park

A very important component of KAUST's innovation ecosystem is its Research and Technology Park. The Park is an integral part of the KAUST campus and community and over 2.7 million square meters in total size.

Activity in the Park has accelerated in recent years. Currently, companies located in the Park and partnering with KAUST include SABIC, Saudi Aramco, Dow, Nalco, Boeing, SEC, and Cray, as well as many KAUST-born startup companies.

The Park has a convincing value proposition. The location of the park provides easy access to the nearby international airport in Jeddah, King Abdullah Economic City (KAEC), and two seaports. The park is fully integrated with KAUST with its unmatched world-class research facilities, excellent local and international talent pool and diverse community. The park offers ready-to-use real estate with full business services, energy services, visual solutions, data management etc.



The Park provides a unique ecosystem within the Kingdom for R&D corporations, SMEs and startups that are developing new technologies for Saudi Arabia and the Middle East, enhancing the Kingdom's mission of diversifying its economy.

The Park provides such an environment for technology-based businesses to access the University's laboratories, technology development facilities, and faculty and student talent. It has an attractive network of public spaces and facilities designed for creative collision and knowledge-sharing.

It also provides an engine of innovation within the Middle East and a strategic base for R&D-oriented corporations pursuing business interests in the region.

Companies locating to the Park list (1) the quality/availability of faculty and research scientists; (2) the overall reputation of KAUST; and (3) the quality availability of students for jobs and internships as important factors in partnering.^{xii} They see KAUST's overall strengths as being its facilities, quality of faculty/researchers and the highly collaborative environment.^{xiii}

The Park provides partners with close proximity to KAUST's uniquely-equipped Core Labs and incubators for technology startups. It provides competitive pricing and flexible space, as well as comprehensive services, including efficient lab and equipment maintenance and access to world-class procurement/supply chain management, business services etc. Park residents also have wider access to community offerings including housing, recreational facilities, schooling for dependents etc.

In the last year Cray, Boeing, and the Saudi Electricity Company have been welcomed as new Park partners on campus.

Phase 1 of the Research and Technology Park is well underway:

- In September 2015, Gulf Data Hub signed an agreement with KAUST to construct and operate an approximately 8,000 sqm Tier 3 Commercial Data Center in the Park.
- In November 2015, the Dow Chemical Company signed an agreement with KAUST to expand its facilities at the Park with the construction of its new 13,500 sqm regional R&D center at KAUST.
- In February 2016, the Park had a ribbon cutting for its newest industry resident partner, Saudi Electricity Company – Center of Excellence in Power Generation.
- Plans are being finalized for the construction of the new 16,000 sqm Saudi Aramco research and innovation center.
- The Park's new Headquarters, conference center and prototyping space are being finalized and are due to open by early 2017.

Investing in a location at the Park is a commitment to the Kingdom's knowledge-based future, where advanced-degree careers and entrepreneurial opportunities await a new generation of Saudis.

The Park offers all types of partners an unmatched opportunity to ride this wave of economic transformation.

Looking to the Future

Exciting New Innovation Initiatives

The University continues to foster a culture that attracts global and entrepreneurial talent, celebrates new ideas and invests in tools to grow and accelerate the innovation and commercialization processes.

The Beacon Fund

The KAUST Innovation Fund, in conjunction with Islamic Development Bank Group (IDB) and Anfaal Capital, has agreed to establish a Saudi Arabia based and focused venture capital fund.

The Beacon Fund will provide venture capital (VC) funding for high-tech startups located in Saudi Arabia (or willing to establish themselves in Saudi Arabia) and lead early-stage financing rounds attracting local investors and international venture capitalists.

Plans for a new Institute for Innovation and Entrepreneurship

KAUST Innovation is proposing the creation of a new Institute for Innovation and Entrepreneurship.

It will include functional space that will accommodate roughly 600 people from 50 different companies – ranging from startups and spin-ins to corporate ventures and other technology companies. It will offer office space, classrooms, laboratories, prototyping areas and workshop facilities.

The Institute will symbolize the strong link between the innovative culture of the University and the strengths of the Park.

Plans for an Enhanced Outdoor Testing Facility

KAUST, in collaboration with industry, has a track record of success at developing initial outdoor testing facilities. For example, KAUST's New Energy Oasis has been an important tool in testing KAUST's solar-related innovations and other prototypes.

There are now plans to enhance KAUST's field-testing capabilities by creating an Innovation Oasis: an Enhanced Outdoor Testing Facility.

This Innovation Oasis would be dedicated to developing and implementing outdoor demonstration and testing platforms for pilot-scale projects at KAUST.

It would provide a place for real life testing of clean technologies and sustainability programs, supported by the talents and resources necessary to becoming the first of its kind in the Kingdom of Saudi Arabia.

Plans for New Public Spaces in the Park

The Park is committed to develop diverse and sustainable open spaces that support the overall quality of all developments, promote community interaction and improve the user experience.

The Park's open spaces will attract users by providing a welcoming, comfortable and lively environment.

New kinds of public spaces and meeting places are now being created in research parks, which can be an important social resource.

Arabian Venture Forum

In November 2015, KAUST held its first annual venture capital event. Over the course of three days, 50 startups, including several KAUST startups, pitched to an audience of over 100 investors from Saudi Arabia, the region and the world. To continue developing this ecosystem, an Arabian Venture Forum event will be held in late 2016.

Takamol Accelerator

Takamol has launched a Kingdom-wide start-up accelerator program and asked KAUST Innovation's Entrepreneurship Center to run the program at KAUST with startup teams located in the Park's Innovation Cluster.

Takamol is a government corporation in Saudi Arabia operating under the Ministry of Labor. It helps to transform the Saudi labor market by launching sustainable projects and activating partnerships between the public and private sectors.

The 9/10ths Startup Accelerator will help aspiring entrepreneurs on their journey success by providing selected startups with up to \$20,000 in seed grants, a one month pre-acceleration practical lean startup camp and a three month mentor-led accelerator.

New entrepreneurs often face a myriad of challenges. The 9/10ths program helps to solve these problems by providing selected startups with free office space, access to prototype development opportunities, marketing and advertising, mentorship, and legal advice. The startup accelerator also provides participants with a valuable opportunity to network with other teams and learn from one another.

Kidventors


It is important to promote innovation and entrepreneurship to the younger generation.

KAUST Innovation offers guidance and support to The KAUST School (TKS) through TKS Entrepreneurs, which provides junior high students at KAUST with business camps, design challenges (Kidventors), community support and the development of their current ideas into potential prototypes.

This mentoring and displays of their "kid-ventions" have been displayed through a variety of mockups and visual displays at KAUST Innovation events.

World IP Day Celebration

Every April 26, many organizations around the world celebrate World Intellectual Property (IP) Day to promote discussion of the role of intellectual property in encouraging innovation and creativity. World IP Day was launched in 2000 by the World Intellectual Property Organization (WIPO) to promote and protect creative ideas.



In 2016, KAUST partnered with the King Abdulaziz City for Science and Technology and the Saudi Patent Office to host Saudi Arabia's 2016 World IP Day Symposium on April 26 and 27th. Participants came from WIPO, Boeing and other important IP-focused organizations.

STEAM Challenge

The STEAM Innovation Challenge is a one of a kind, two-day intensive weekend ideation event held in KAUST. It involves KAUST students working in mixed, interdisciplinary teams alongside students from partnering Saudi Universities.

The objective is for the teams to develop and present well-defined solutions to three major real world challenges. The STEAM sponsor, the Islamic Development Bank (IDB), will outline these challenges. The students chosen for this elite activity will have a background or expertise in Science, Technology, Engineering, Arts and Mathematics. It is a key part of the KAUST Enrichment in the Spring Program.

Saudi Arabia Advanced Research Alliance (SAARA)

The SAARA alliance members intend to establish capacity and resources within Saudi Arabia where industry and academia can bring technology and IP and see this technology transformed into commercially ready products and applications ready to be accepted or adopted by industry.

Alliance members include KAUST, the King Abdulaziz City for Science and Technology, the Saudi Technology Development & Investment Company, the Research Triangle Institute, Saudi Aramco, and King Fahd University of Petroleum and Minerals.

Case Studies: Startups and Key Partnerships

Startups

Several KAUST startups have now grown to a point of leasing space within the Park including FalconViz and NOMADD.^{xiv}

KAUST-run accelerators not only assist startups with creating 'Made in Saudi Arabia' innovations, but they also provide students with strategic advice, mentorship and outside-the-box perspectives that help them take their idea to the next level.

The early signs are positive. KAUST Innovation received a "High Impact Incubator" award last year from UBI Global for startup incubation activities in the Kingdom. A number of KAUST-related startups were listed as top 100 innovative startups (including three in the top 10) at a late 2015 Forbes Middle East Event in Riyadh.

i. Sadeem

An example of a promising startup to emerge from the KAUST Innovation ecosystem is Sadeem, which recently won first place at the KAUST Startup Accelerator Showcase. The team has developed a wireless sensor network that is the world's first solar-powered urban flood and traffic monitoring system. Sadeem received mentorship from KAUST Innovation, including attending the Entrepreneurship Center's Hikma IP-based Accelerator and seed funding.

ii. FalconViz

Another new KAUST startup is FalconViz. They have created a 3D aerial scanning and modeling system that utilizes multi-rotor copters and fixed wing unmanned aerial vehicles (UAVs) with Aerial structure from motion (SFM), a proprietary software.

Launched in January 2015, and based in the Park, FalconViz is now a team of 10 and has already secured over \$200,000 USD in seed funding from KAUST and is poised to close its first institutional round from Saudi-based VC funds.

The company says its edge derives from the technology that was developed by engineers and scientists at KAUST.

The process can be broken down into three steps: First, high-resolution imagery is gathered using a specially configured autonomous UAV navigating a predetermined flight path. Second, the images, orientations and positioning data gathered during the flight are processed and matched together using Aerial SFM. Finally, an interactive 3D model is generated by Aerial SFM, offering a detailed documentation of the scanned area.

The product has already been commercialized and the service sold to various clients in urban planning and real estate in the Kingdom. Examples are Jeddah and Mecca municipalities, the Aviation Investigation Bureau (AIB) and Jeddah's Kingdom Tower, a skyscraper under construction that will be over 1,000 meters high.

iii. NOMADD

In 2016, KAUST startup NOMADD closed a Series A funding round from KAUST's Innovation Fund totaling \$1 million USD.

The NO-water Mechanical Automated Dusting Device or 'NOMADD' is a smart and ecological desert solar panel cleaning system. The technology was developed at KAUST by Georg Eitelhuber, NOMADD's founder, got patented with the help of the University's Innovation and Economic Development Department and previously received \$200,000 in seed funding from the Innovation Fund. NOMADD is based in the KAUST Park.

This new financial boost will allow NOMADD to continue to commercialize, hire key staff, carry out deeper tests and build bigger models.

Key Partnerships

In addition to startups, KAUST Innovation has a number of key partnerships with KRTP partners.

i. Saudi Aramco

Saudi Aramco is a Park partner that has deep connections with KAUST. With its Research and Development Center at KAUST, Saudi Aramco and the University work together across a variety of domains, such as high-impact research, talent acquisition and development, entrepreneurship, and cultural outreach programs.

The strength of the collaboration is also demonstrated by Saudi Aramco having nearly 30 company-sponsored employees pursuing advanced studies at KAUST, the presence of over 20 full-time company scientists on location at the university, and Saudi Aramco's hiring of KAUST graduates.

There are also long-term research collaborative agreements between Saudi Aramco and KAUST, in various fields such as geophysics, reservoir engineering technology, production technology, seismic, fuel combustion research, catalysis, material sciences, renewables, information technology, and the environment.^{xv}

This collaboration between Saudi Aramco and KAUST has benefitted students. For example, eleven KAUST graduates working with Saudi Aramco turned a drawing they brainstormed into a robotic crawler ready for real-life application within just 14 months. Compact and operated wirelessly, it can detect steel thinning due to corrosion in pipes, tanks, vessels, and other hard-to-reach steel structural assets. Their invention won the Industry Glory Medal of the International Federation of Inventors Association.

ii. SABIC

SABIC is a Saudi downstream petrochemical company, active in chemicals and intermediates, industrial polymers, fertilizers and metals.

SABIC has a research center with over 60 employees at KAUST and a strong commitment to KAUST's research efforts, and in particular the University's focus on areas that are of high importance to SABIC's long-term research strategies, including nanomaterials, novel polymer synthesis, catalysis and computational modeling.

Throughout 2015 SABIC continued to be constructively engaged with KAUST. The initial focus, a generous Postdoctoral Fellowships Program, has been balanced with strong goal-oriented sponsored research programs. A large number of new projects were initiated in 2015. SABIC also participated in Career Day and Career Fair, hiring one KAUST graduate and providing industrial transition jobs to three postdocs/research scientists.

iii. Saudi Electricity Company (SEC)

As the major player in the power and electricity industry in Saudi Arabia, SEC continues to strengthen its partnership with KAUST through a variety of different collaborations, including the inauguration of the SEC Center of Excellence during the recent 7th Annual KAUST Industry Advisory Board (KIAB) meeting on February 24-25, 2016.

In April 2015, KAUST and the SEC signed a Memorandum of Understanding that commits to developing joint R&D projects, accessing KAUST's testing facilities and jointly engaging with SEC technology partners and KAUST industry partners such as GE and Siemens.

The Center will explore innovative solutions in the area of power generation, with focus on fuel and efficiency. It will work closely with KAUST's Clean Combustion Research Center.

iv. Dow

Dow puts a high priority on sponsored research, leveraging unique facilities to explore science, and working with university consortia to get government funding.

Their collaboration with KAUST has resulted in increases in business relevant data, patent applications and external publications.

Dow has hired a number of KAUST students for their Dow Middle East Innovation Center at KAUST, sponsored student competitions, and organized a Dow Middle East Innovation Summit at KAUST in March 2015. They have a presence in the Innovation Cluster in the Park and are currently building their own R&D/Innovation facility.

v. Boeing

Boeing has been a strategic collaboration partner with KAUST Innovation since the beginnings of KAUST.

Today, Boeing is a major sponsor of various research projects with KAUST faculty and has maintained an office in the Park since 2014. In the future, the research partnership between KAUST and Boeing will be focused in the areas of advanced materials, systems and analytics, structural technologies and sustainable technologies.



Conclusion

KAUST's innovation ecosystem is playing a pivotal role in contributing to the University becoming a global destination, as well as contributing to the economic diversification of Saudi Arabia and its transformation to a knowledge-based economy.

KAUST Innovation's strategically connected offerings including its Research and Technology Park, industry engagement, technology transfer, Innovation Fund and Entrepreneurship Center programs are supporting each other to accelerate both early-stage and market-ready technologies.

There is also a strong link between this innovative ecosystem and the Park. It has created a hub where technology-based businesses can access the University's laboratories, technology development facilities, and faculty and student talent.

Partners also have access to the wider ecosystem including an attractive network of public spaces and facilities designed for creative collision and knowledge-sharing.

This overall ecosystem is establishing KAUST Innovation and the Park as a global engine of innovation and a strategic base for R&D-oriented corporations pursuing business interests in the region.

By continuing to foster a culture that celebrates innovation, invests in tools that accelerate the innovation process, attracts global talent and partners creatively and authentically with industry, KAUST Innovation will continue to grow the Park as a global destination.

Appendices

1. Saudi Arabia Facts and Figures

Statistics ^{xvi}	
GDP	\$1.681 trillion (PPP; 14th)
	\$752.500 billion (nominal; 19th)
GDP growth	3.5% (2014)
GDP per capita	\$51,924 (PPP; 10th)
GDP by sector	agriculture: 3.2%; industry: 60.4%; services: 36.4% (2009 est.)
Inflation (CPI)	100% (2014)
Labor force	7.63 million (2009 est.) note: about 80% of the labor force is non-national
Labor force by occupation	agriculture: 6.7%; industry: 21.4%; services: 71.9%
Unemployment	11.6%
Main industries	crude oil production, petroleum refining, basic petrochemicals, ammonia, industrial gases, sodium hydroxide (caustic soda), cement, fertilizer, plastics, metals, commercial ship repair, commercial aircraft repair, construction
Ease-of-doing-business rank	22nd

2. KAUST Attributes

As a new institution, KAUST has the distinct advantage to have been purposefully designed as a global and private university with several key attributes:

1. An environment where excellence in curiosity-driven and goal-oriented research thrive. Through our endowment, we provide flexible and sustained support to pursue long-term research and scientific goals. Our people are empowered and encouraged to aim high and investigate important questions with passion and freedom. Few universities enjoy this level of consistent support. In return, we hold ourselves to the highest standards of performance, behavior, and ethics.
2. A global DNA that bridges people, ideas and traditions from around the world. This is reflected in: (a) our diverse and international university community of faculty, students and staff; (b) strategic and sustained collaborations with key institutions across the world; and (c) commitment to contribute to the welfare of society by placing special emphasis on areas of strategic importance to the world.
3. Cross-disciplinary organization between Academic Divisions and Research Centers. While leveraging disciplinary excellence, our matrix structure of three Academic Divisions encompassing multiple disciplines and eleven strategically connected Research Centers.
4. Encourage our faculty, researchers and students to be entrepreneurial and free-spirited while pursuing research that translates science into discoveries and new technologies.
5. Unparalleled laboratory facilities, equipment and expertise. We provide our people and our research partners the opportunity to conduct expertise. We provide our people and our environment with exceptional facilities, equipment, and support staff. Our ability to sustain these exceptional facilities over the long term is an important competitive advantage over other institutions.
6. Collaborative learning environment and a distinctive educational experience. Our learning environment encourages KAUST students to think beyond the laboratory to consider how their ideas can change the world. Through the spirit of discovery, we promote collaboration, excellence, curiosity, integrity, and a passion for doing things that matter.
7. Innovation and technology development for public benefit. We contribute to the cultivation of a knowledge and innovation-driven economy. Our Research and Technology Park is physically and organizationally integrated within the University to facilitate corporate interactions, innovation, knowledge transfer and economic development. Leveraging ideas from around the world, KAUST is positioned to accelerate both early-stage and market-ready technologies.
8. A work-play-live environment. We are more than a premier university: we are also a city. On the shores of the Red Sea, our services and amenities offer an exceptional quality of life, from schools to recreation to health care. We are a community where more than 100 nationalities learn, live, and thrive together.

3. KAUST Infographics

OUR PEOPLE (Fall 2015)



901
Students



135
Faculty



424
Post Docs



234
Research scientists



6697
Community members



2231
Workforce



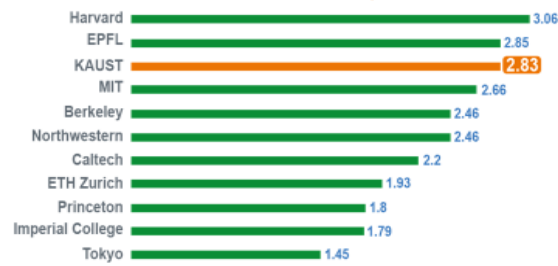
1432
School children



104 **83**
Community Workforce
Nationalities

Annual Numbers, as of September 2015

Material Science Field Weighted Citations

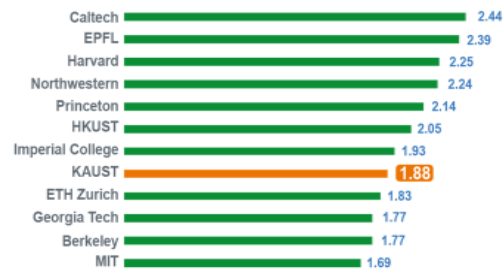


*Articles Only
Source: Scival, data as of 24 August 2015

Energy



Field Weighted Citations



*Articles Only
Source: Scival, data as of 24 August 2015

4. Maps of the Park



5. KAUST Industry Collaboration Partners



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- i <https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html>
- ii <http://www.doingbusiness.org/data/exploreeconomies/saudi-arabia/>
- iii https://en.wikipedia.org/wiki/House_of_Wisdom
- iv http://www.kaust.edu.sa/message_from_the_king.html
- v <http://www.kaust.edu.sa/vision.html>
- vi KAUST. Innovation and Economic Development Department (2016). Innovation and Economic Development Slidedeck. Slide 4.
- vii KAUST. Innovation and Economic Development Department (2016). Innovation and Economic Development Slidedeck. Slide 8.
- viii <http://www.kaust.edu.sa/vision.html>
- ix <https://corelabs.kaust.edu.sa/about>
- x SciVal, data as of August 24, 2016.
- xi KIAB Executive Summary Notes
- xii DCI Report to Innovation & Economic Development on Blueprint Findings. March 2016.
- xiii <http://techcrunch.com/2016/01/28/tech-blooms-in-the-saudi-desert-as-aerial-scanning-startup-falconviz-takes-flight/>
- xiv <http://www.saudiaramco.com/en/home/news-media/news/saudi-aramco-kaust-unveil-partnership-committee.html>
- xv https://en.wikipedia.org/wiki/Economy_of_Saudi_Arabia