

INSIDE K&A

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Khatib & Alami Newsletter

**REVOLUTIONARY
TECHNOLOGIES**
build the future



04

DR. ZUHEIR ALAMI

In Honor of a Great Man

0



SMART URBANISM

Saudi Smart Cities Conference 2017

THE LEGACY OF A POST-WAR REHABILITATION CULT

The Second Iraq Exhibition

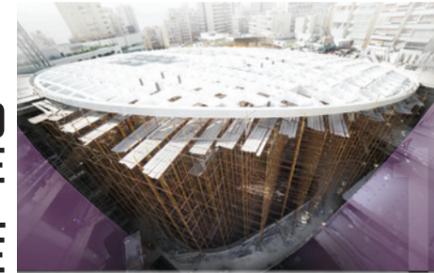
15



12

Khatib & Alami puts well on track a logistic promise to Oman and the GCC

BEHIND THE RISE OF A RETAIL EMPIRE



8

ABC's Biggest Verdun Mall Reaches Completion

2



PIONEERING ASSESSMENT AND MITIGATION

Sand Dunes on Saudi Roads and Railways

25

NEW GIS ENTERPRISE PROJECT KICKS OFF

Duqm Special Economy Zone Authority in Oman

26

KING ABDULAZIZ CITY FOR SCIENCE AND TECHNOLOGY

A microclimate that offers a secluded pedestrian-friendly and community-oriented development



FIGHTING WATER SCARCITY DROP BY DROP

0

Reinforcement of Al Sharqiyah Transmission System

REINFORCING ELEVATING MONITORING

Enterprise GIS Operations at Kuwait Ministry of Electricity and Water

32

34

CELEBRATING EGYPT GOLDEN AGE IN IRRIGATION AND HYDRAULIC ENGINEERING

IN Honor of a Great Man

Khatib & Alami's Co-founder and Chairman Emeritus, Dr. Zuheir Alami, received the "Lifetime Achievement Award" by the American Society of Civil Engineers (ASCE) Lebanon Chapter. The award ceremony took place during the ASCE Annual Seminar Dinner held on March 1st 2017 at Le Royal, Dbayeh.

Founded in 1852, the ASCE is considered as the leading provider of technical and professional conferences, the world's largest publisher of civil engineering content, and an authoritative source for codes and standards that protect the public. It represents more than 150,000 members of the civil engineering profession in 177 countries.

Each year, the ASCE invites nominations for 85 Society Awards that recognize civil engineers who advance the profession either through achievement or published papers. The "Lifetime Achievement Award" is presented to members who have advanced their profession, exhibited technical competence, and significantly contributed to public service and research. The Awardees must have demonstrated a life-long and eminent contribution to engineering through research, education, or public service.

This award honors Dr. Alami's lifetime achievements and dedication to putting his education and

specialization to good use. After graduating with honors from the University of Texas, he returned to Lebanon and taught for many years at the American University of Beirut (1952-1976) and the Beirut Arab University (1965-1975). While developing and expanding Khatib & Alami (K&A) business, he remained passionate about teaching and sharing his vast knowledge with the future generations of engineers. From 1977 onwards, he focused his energies exclusively on growing K&A.

From a small office in 1964, in an apartment shared with two other friends with a total number of six people, K&A grew to a multinational company with 32 offices worldwide and around 5,000 employees. Today, K&A is a viable reality, a shared vision, and the product of hard work carrying a legacy for future generations of professionals. Dr. Alami continues to this day to be a role model within K&A with his vast wisdom and visionary experience.



SMART

SM-URBAN

INTELLIGENT

INFRASTRUCTURE

SYSTEMS

DEVELOPMENT

CONSTRUCTION

REPAIR

RESILIENT



SMART URBANISM

Showcased at Saudi Smart Cities 2017 Conference

Smart cities can only be shaped through better urban planning and intelligent infrastructures using a combination of state-of-the-art technologies and good governance.

Believing in that, Khatib & Alami (K&A) was a Silver Sponsor for the first Saudi Smart Cities 2017 Conference, held at the Intercontinental Hotel in Riyadh from the 16th to the 18th of May, under the patronage of the Ministry of Municipal and Rural Affairs (MoMRA).

This conference is a platform for MoMRA to realize its full potential, bringing all the key stakeholders who are and will be involved in the infrastructure's modernization. This boosts infrastructure, increases investment, designs sustainable cities and improves quality of life for all. With the responsibility of developing urban infrastructure and creating citizen-centric cities, K&A's

City and Regional Planning, Infrastructure, and Geospatial Systems Integration teams showcased their smart vision, strengths and capabilities to help the Kingdom reach its goals.

K&A exhibited its most recent smart urban planning projects, using Virtual Reality (VR) to help the client experience, evaluate and experiment the design, creating a realistic scenario that responds to client's needs and requirements. This is yet another competitive asset to our company in the Planning and GIS sectors.

The Saudi Smart Cities Conference, being the first of its kind in the Kingdom, promises to provide international best practices, state-of-the-art technologies and create an interactive dialogue to engage citizens, youth, and women in developing the Kingdom's future cities.

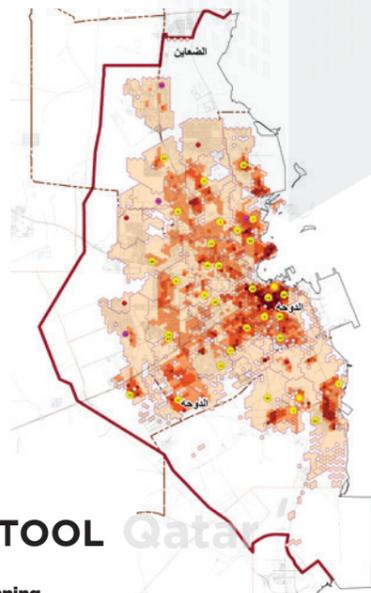


SMART CITIES

REVOLUTION

Cities have been trying to deal with many problems of urban life. Whether helping citizens to find parking lots or spotting problems before they occur, effective data use and technological infrastructure are revolutionizing the way cities work. At Khatib & Alami (K&A), city planners design cities by leveraging on technology to serve people. Our smart cities solutions are built around users, information, and infrastructure and designed to optimize resources; thus, creating value in the digital ecosystem and promoting a complete and sustainable development.

2015



DYNAMIC PLANNING TOOL

Qatar Smart Schools Planning

K&A has been pioneering new GIS-based methods in order to make more rational decisions on planning for community facilities, specifically schools for all of Qatar for 2030 by implementing our "Where is My School?" System.

K&A designed a state-of-the-art solution that captures and assesses the allocation of education facilities in the country, through geographical distribution across a hexagonal cell grid, across all Qatar. The advantage of this method is that distances are equal between each cell - enabling GIS-based modeling of travel distances from home to school across Qatar's road network.

The final model chooses the optimum locations for new schools based on minimizing travel distances from pupils un-served by existing schools. Our team utilized our spatial planning and GIS expertise by designing and building a model based on ESRI's location-allocation tool. It will offer smart solutions to the deficiencies detected, rectifying the distribution of public education facilities, and using an intelligent and dynamic model to forecast future needs based on demographic information and child yield indicators.

2016



SMART SATELLITE CITY UAE

Desert Rose Smart and Sustainable City

The conceptual spatial planning and design of the Smart Satellite City resembles the "Desert Rose" plant symbolizing sustainability and competency.

The Satellite City provides sustainable user-friendly transport systems, optimized economic resourcing, renewal energy, and recycled waste water for irrigation.

The city's linear Activity Spine hosts a pedestrian atrium served by electric light-rail which could be linked with Dubai Green Metro Line. A green belt of up to 700 hectares is also planned along the desert edge to shelter the city and improve micro climate, as well as for agricultural activity. Proposed PV solar panels on all roofs and Bioenergy plant aim to supply up to 800 MW to the power grid.

2016



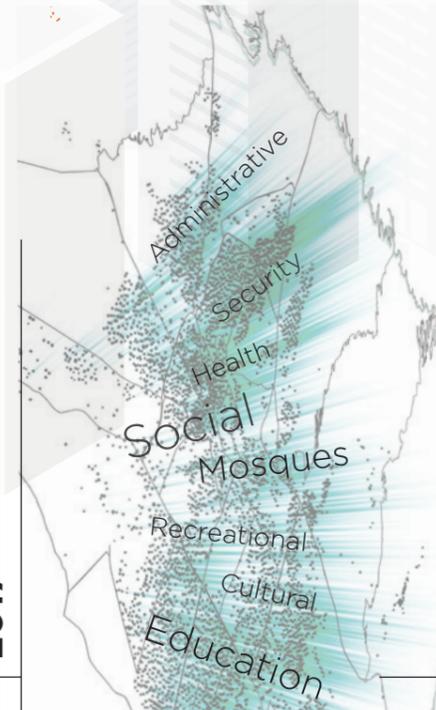
ITS FOR ECOTOURISM KSA

Retreat for Nature Lovers in KSA

K&A was commissioned to conduct a comprehensive site assessment, concept development and smart infrastructure recommendations for a site development along KSA's Red Sea coast for spa resorts and eco-touristic development envisioned to host one million visitors per year.

With a major focus on promoting innovative technologies and environmental mitigation, the emphasis was on smart integrated infrastructure systems to regulate consumption of resources, establishing a multi-modal Intelligent Transport System (ITS) complimented by a mobile open transport data app. Energy-efficiency technology and green buildings were prominent features of the concept. District cooling, desalination, water supply, and a concentrated solar power plant were all elements of an integrated and smart infrastructure management system planned for the new touristic destination making a novel and unique development in Saudi Arabia.

2017



LAND MANAGEMENT E-PORTAL KSA

Arriyadh Integrated Plan for the Provision of Public Facilities

K&A is developing on the behalf of Arriyadh Development Authority (ADA) a proposed smart participatory land management e-portal for use by all involved stakeholders.

Simultaneously a solution to address shortage in lands is allocated for public use to optimize costs and land use management at the metropolitan scale; K&A devised a smart governance and land management tool.

By pooling data from relevant authorities, stakeholders, ministries and the ADA, as well as eliminating all data discrepancies, we developed an all-encompassing land bank then forecasted public services land allocation needs up to the year 2030 and created a prioritization plan based on comprehensive indicators. We developed a dynamic e-platform, which will allow the continuous update of the services data base and the mapped land bank by connecting relevant stakeholders to input data, collaborate and interact for the purpose of optimizing land use and effectively managing their land assets.



ECO-INDUSTRIAL PARKS LEBANON

Design of the Master Plan of 3 Industrial Zones

K&A developed the master plan designs of three industrial zones in strategic locations across Lebanon on behalf of UNIDO and the Lebanese Ministry of Industry in line with the Ministry's 2025 Vision for sustainable industrial development.

Smart water management through irrigation and non-domestic water usage sourced from the common sewage treatment plant, rainwater harvesting, water recycling and monitoring systems were planned to maximize water efficiency. Energy-efficient design of industrial buildings, PV solar farms and panels on all roofs to produce 50% of total power as well as waste-to-energy plants were all planned to rationalize the production mix, improve sustainability, and reduce carbon footprint.

Smart waste management, another core feature of all three industrial zones especially in Baalbek, are envisioned as a recycling and waste management hub. An integrated waste management system was developed through sorting on-site, collection service, biogas production, and recycling.



عمان Rail

Khatib & Alami (K&A) puts well on track a logistic promise to Oman and the GCC

K&A's track record in successful rail projects is impressive by any standards having spearheaded the most important and complex rail projects in the Middle East and GCC such as: Al Mashaer Al Moqaddassa, Haramain High-Speed Rail, North-South Railway, Makkah Mass Rail Transit, Riyadh Metro and Petro Rabigh in KSA; Damascus Metro Green line in Syria; GCC Railway and Dubai Rail in UAE. Oman Rail is another milestone for K&A, winner of the multifunctional consultancy services contract.

The country's first rail, this pivotal project is a major step to Oman's becoming a key strategic logistic hub in the region. In conjunction with other GCC member countries, the 2,135 km rail network aims to provide competitive, safe and reliable rail-based solutions by connecting major Oman Ports of Sohar, Duqm, and Salalah, to the GCC and consequently widening the Region's reach.

K&A is playing a trailblazing role as the lead joint venture partner and is working closely with international consultants Getinsa - Eurostudios (part of TBF Ingenieria) and RINA Services (D'Appolonia) on the operation and maintenance, infrastructure, rolling stock, management, railway facilities, mass transit system and auxiliary services.

Why Rail? Benefits are many.

- One freight train can on average, carry 2,250 tons of freight replacing 120 trucks movement
- Rail-based transport cargo is more economical than road for distances over 600 km; the price of transport is approximately 40% of road-based
- Rail is about 9 times safer than road
- Rail uses 60 to 80% less energy per km than road transport
- Transporting cargo by rail results in 80% lesser CO2 emissions vs. transporting cargo by road
- Rail offers higher transportation speed than road, coupled with safety and reliability
- Noise damage from road traffic is about 25 times higher than that of rail
- On average, a double track railway can carry up to 10 times the number of people per hour than a two-lane road

The GCC Network's Future Outlook

The Gulf region is rapidly growing; some deserted areas 30 years ago have become today vibrant modern communities. The population is increasingly fast growing. Many international companies have local offices in the Gulf States and service industries are developing in response to new opportunities. Along with this, there has been a tremendous increase in transport demand and in the infrastructure and facilities of roads, ports and airports. It is now becoming evident, that roads alone cannot meet the growth in metropolitan travel demand.

Oman intends to realize a gateway to the Middle East, Africa and South West Asia, thanks to its geographical position as part of its national logistic strategy and overall development direction. An inter-modal approach is being used, whereby ports provide access to sea lanes and the railway network is the link to the Middle East and beyond.

The proposed regional and integrated GCC Railway will boost GCC economic development, sustain national and regional growth, enhance regional trade and promote GCC supporting industries in the neighboring economies.



Humanitarian

aid program

Many are the different ways we can aid those who are in need! It is important that we together understand, as a united front, and position our aim towards more positive opportunities to support and help make a difference in people's lives.



On May 19, 2017, Mr. Samir Khatib, K&A's Executive Vice President, was awarded on behalf of Khatib & Alami the honorary Humanitarian Aid Programs shield in appreciation of K&A's consultancy services in assessing and proposing humanitarian aid programs funded by HH Khalifa Bin Zayed Al Nahyan foundation.

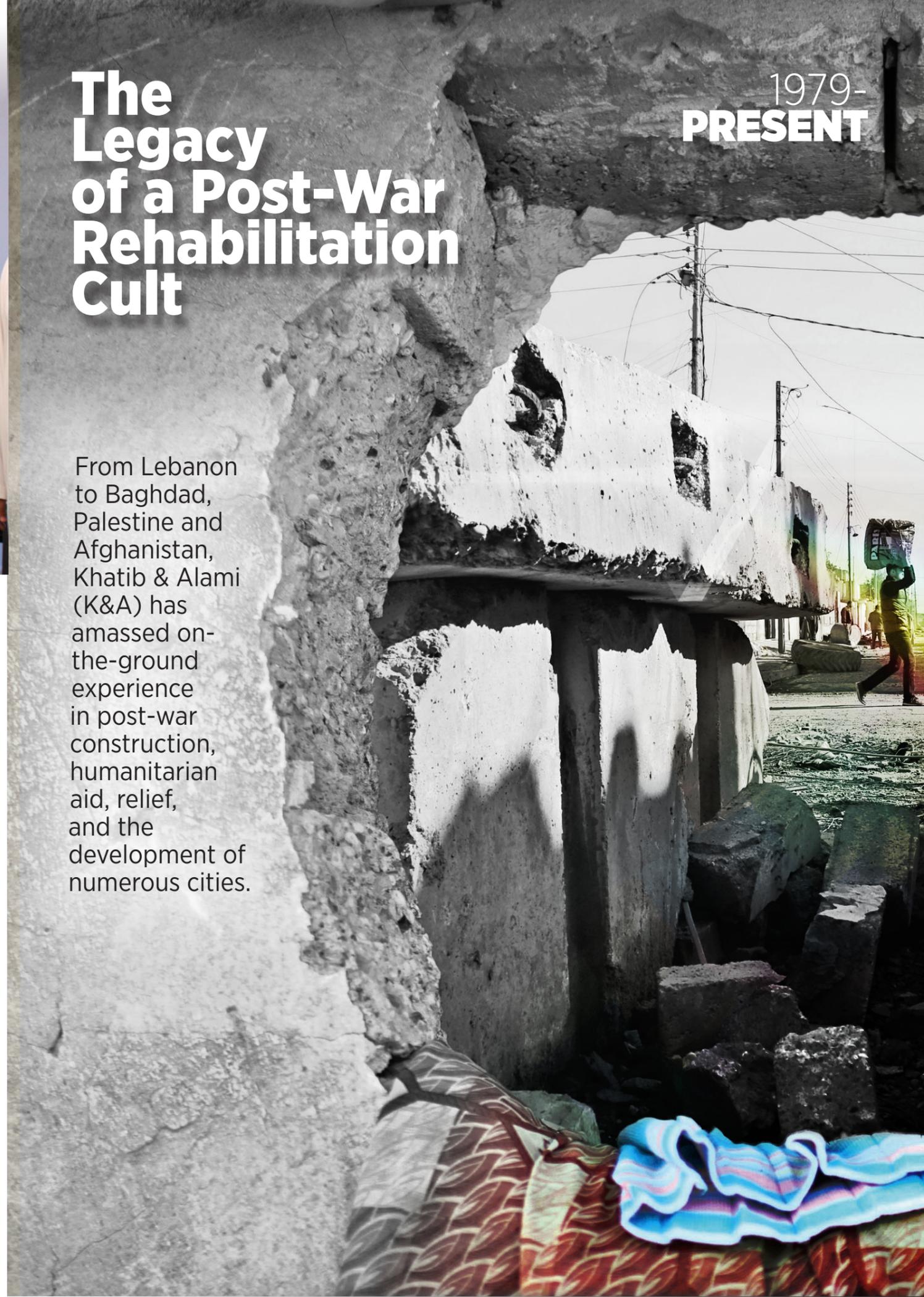
This foundation's sole mission is to pioneer initiatives for welfare and to focus its health and educational efforts on domestic, regional and global scales.

➤ His Highness Hamad Saeed Al Shamsi, the United Arab Emirates Ambassador in Lebanon along with his chief staff presenting the award to Mr. Khatib

The Legacy of a Post-War Rehabilitation Cult

1979-
PRESENT

From Lebanon to Baghdad, Palestine and Afghanistan, Khatib & Alami (K&A) has amassed on-the-ground experience in post-war construction, humanitarian aid, relief, and the development of numerous cities.





Since K&A's early beginnings, the firm stood strong in the face of adversity, political instability and violence. Amidst the chaos, K&A managed to relocate several times in Lebanon and abroad; safeguard and archive original projects drawings; and keep momentum with many projects on the rise in the GCC. K&A bravely fought its own war during these difficult times: the struggle of upholding professionalism, delivering client satisfaction, and improving lifestyles.

This is a testament of K&A's perseverance. After the Lebanese Civil War in 1979, K&A played an active role in post-war reconstruction, humanitarian aid, relief, and the redevelopment of numerous cities on a regional and international level. K&A understands the specific intricacies of post-war reconstruction which necessitates working with humanitarian crises, mitigating risk of life and property and delivering a broad range of required services. This context further entails meaningful engagements from K&A with multiple stakeholders from central governments, local authorities to financing agencies and multinational organizations, in which K&A succeeds in.

REBUILDING CITIES WHERE LIVING IS SOBER

K&A has amassed on-the-ground experience in Damage Assessment and Reconstruction, Urban Development, Rehabilitation, Urban Expansion, and Infrastructure. We are the partner of choice for various clients in Baghdad, Afghanistan, Lebanon, Gaza working with the Council for Development and Reconstruction (CDR), the Higher Relief Commission, Mayoralty of Baghdad, Kabul Municipality and Consolidated Contractors Company (CCC). Furthermore, K&A is largely familiar with World Bank (WB) procedures and requirements working and administering projects financed by the WB.

The second Iraq exhibition

to Build and Reconstruct the Liberated Areas from Terrorism

LOOKING FORWARD TO IDPS' RETURN HOME IN NINEVEH, KIRKUK AL-ANBAR, SALAHADDIN AND DIYALA GOVERNORATES IN IRAQ

From the 15th to the 17th of May 2017, at the Erbil International Fair Ground, was held "The Second Iraq Exhibition to Build and Reconstruct the Liberated Areas from Terrorism". Under the patronage and presence of Dr. Mustapha El Hiti (Director of

REEFATO) and with the participation and support of Nineveh Governor Nofel Al-Akub, the exhibition brought together the Reconstruction Fund for Areas Affected by Terroristic Operations (REFAATO), international consultants, and contractors to plan, propose, and undertake the assessment and projects needed to help IDPs (Internally Displaced Persons) return home safely.

Part of K&A's legacy is to make a life changing difference in improving livelihood and rebuilding cities. 11 million people are in need of humanitarian assistance and 3 million are internally displaced (according to OCHA <http://www.unocha.org/iraq>). We couldn't be more proud to sponsor this event in Iraq by liaising with Governors, Donor countries' Representatives and other stakeholders on future collaborations. K&A is confident to be the catalyst in supporting IDPs' return home by improving the living conditions, housing, infrastructure in the damaged affected sectors: housing, electricity, water, roads, bridges, health, education, and heritage.



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- **Photo 1:** Dr. Mustafa El Hitti (Head of Reconstruction Fund for Areas Affected by terroristic Operations REFAATO) presenting the Certificate of Appreciation to K&A
- **Photo 2:** Mr. Nawfal AlAkub (Governor of Nineveh) explaining the urgent needs and priorities of Nineveh Governorate and listening to K&A team briefing on K&A experience in post war activities
- **Photo 3:** Dr. Mustafa El Hitti (Head of Reconstruction Fund for Areas Affected by Terroristic Operations REFAATO) visiting K&A's booth

BEHIND THE RISE OF A RETAIL EMPIRE



ABC'S BIGGEST VERDUN MALL REACHES COMPLETION

A Good Neighbor. A Great Experience.

Khatib & Alami (K&A) celebrates the completion of ABC Verdun - a grand finale that summarizes a long and arduous journey driven by a determined pursuit for excellence in Design, Construction Supervision, and Retail Delivery Management.

ABC Verdun Mall is envisioned to be a prime urban retail and entertainment destination located on a strategic site in one of the most vibrant Beirut districts. Occupying a prime corner in Verdun, ABC Mall's development is designed as a permeable structure connected to its predominantly residential fabric. The design reflects a Mediterranean sensibility of openness and connectivity combining a casual modernity appropriate to its forward-looking position.



K&A surpassed many challenges, namely:

- A large scale project - being the largest mall constructed in Beirut
- Technical complexity - all parties who worked on the project admitted that the project was too complex.
- K&A had to coordinate with many parties involved in the project, from the owner side (Client Representative & ABC Leasing Team) to the main contractor MAN Enterprise, to DGJones the project management company, to ABC department store international and local designers, to the landscape architect.
- Both the Design and the Construction project schedules requested by the client were too tight.

The design and construction of Verdun Mall started three years ago amidst difficult times. On an 18,000 m² property at the heart of Verdun with over 150,000 m² built-up, ABC Verdun Mall is one of the biggest civil engineering projects in Lebanon worth \$300 million.

Inspired by the intrinsic open design concept and the outdoor architecture of the two existing ABC Achrafieh and ABC Dbayeh malls, ABC Verdun is by far the largest, housing:

- 10,000 m² of department store, occupying the prime corner of Verdun Street and Tamer Mallat, a powerful presence in the neighborhood well-integrated within the composition of the overall project,
- 6,000 m² of entertainment and leisure hosting a family entertainment area and 11 cinema screens (9 regular screens and 2 VIP screens one of them operating as 4D Max).
- 1,800 m² of a landscaped garden that adds an attractive appeal to the mall and a lush al fresco courtyard facing retail boutiques and café seating. Intended to be "a community mall" designed for pedestrians, yet a thorough traffic study was conducted to ensure the new ABC mall is highly accessible with three main entrances and 1,700 parking spaces.

This modern, open mall is LEED certified.



A Whole of Life Consultant

K&A is the multidisciplinary consultant of ABC Verdun:

- Providing whole of life consultancy services from early Design stages to Construction Supervision and Retail Delivery Management
- Liaising with in-house market sectors' experts in buildings, infrastructure, power, and engineering services to ensure the successful completion of the project.

As a testament of K&A's perseverance in upholding professionalism and delivering client's satisfaction, ABC Verdun extended K&A's broader role to Retail Delivery Management, in which K&A proved again to be successful.

K&A's new responsibilities aimed to ensure tenants are well prepared for the big day. With a target of 60 to 65% of retailers to be ready, K&A played a pivotal role in coordinating with 190 units from pre concept design stages to construction and operation; hence, ensuring they abide by all pre-developed design and mall guidelines and site regulations.





Boosting Egypt's Economy:

DAMIETTA FURNITURE CITY

Connecting the Nile and the Mediterranean Sea, Damietta city is known for being one of the most important furniture's manufacturers in Egypt. In 2016, Egypt's Ministry of Trade and Industry announced that a furniture manufacturing park inside Damietta will be established.

Khatib & Alami (K&A) was commissioned to undertake the design and construction supervision for phase 1 related infrastructure works, small and medium manufacturing workshops, and the city's service centers.

The infrastructure works of phase 1 covers a full spectrum of multi consultancy services: a sewage network with a total length of 14 km; 2 pump stations and a water supply network with a total length of 15 km; water tank capacity of 5,000 m³; roads networks with a total length of 20 km; and an electrical network with a total length of 50 km of medium voltage cable, and 40 km of low voltage cables.

Damietta Furniture City project is built on 139.44 ha (67.2 ha for phase 1 and 72.24 ha for phase 2) and will include a myriad of facilities: furniture industries, medium and small manufacturing workshops, city services center, warehouses, hotel, exhibition center, hospital, conference center, infrastructure networks, and road networks.

This pivotal project is the cornerstone of improving Egyptian furniture exports. Damietta Furniture City project will benefit from the latest advanced technologies and is set to make a big leap in Egypt's furniture industry, thus, creating thousands of job opportunities.

On the 23rd of May 2017, the first phase of Damietta Furniture City was inaugurated by President Abdel Fattah El-Sisi in a video conference aside other major national projects in Damietta Governorate. This event was marked by the presence of K&A Cairo office engineers, Mr. Hany Shahin, Mr. Amr Sharaf, Mr. Ashraf Ayoub, and the supervision team.



Pioneering Assessment and Mitigation of

SAND DUNES ON SAUDI ROADS AND RAILWAYS

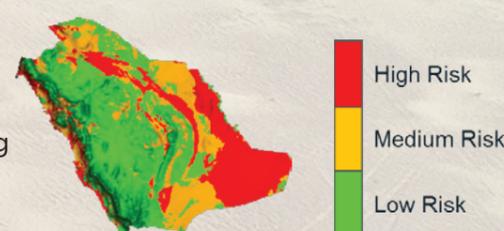
Around 30% of the land in Saudi Arabia is covered by sandy deserts. Sand itself is harmless; however, once molded by the wind into dunes and sand sheets, it becomes a relentless intruder that must be stopped.

The main consequences of sand on roads and rail has raised serious concerns on increased maintenance and cleaning, reduced traffic speeds and safety, and adversely affected economic and social impacts. Under these circumstances, sand control becomes a necessity to avoid major material and socioeconomic damages, and to reduce hazardous impact on roads, irrigation, water resources, urban areas, agriculture, and infrastructure.

The encroachment of dunes has always been a recurrent problem in Saudi Arabia; for decades, the Arabian Peninsula has waged a battle against this dominant presence to ensure the safety of its citizens and road/rail users. In line with this and given our broad expertise in Geotechnical & Heavy Civil Engineering, Khatib & Alami (K&A) was awarded the study for the whole Kingdom's highways and railways. This was a challenging project since the transportation network is large and passes through critical sand areas. K&A undertook the surveying of more than 6,000 Km of

roads across Saudi Arabia, carrying out sampling from many locations, a state-of-the-art wind/weather modeling and analysis, Computational Fluid Dynamics (CFD) modeling, geotechnical stability analysis and simulations, proposition of remedial measures, and enhanced road and rail cross sections. A wide GIS database was also developed for this purpose.

Sand Dune Stabilizing solutions are many and can be stabilized chemically, mechanically or biologically. Options include building sand fences to break up the dunes' outlines and reduce their accumulating mass, forestation and vegetation by planting trees, fences at various intervals, spacing, porosity and arrangements, spraying with polymer or mixing with bentonite dissipation, immobilization, or adopting an aerodynamic road cross section. The most appropriate course largely depends on the size and type of the dune.



Sand Drift: Risk Zoning Map

High Risk
Medium Risk
Low Risk

K&A Speaks Sand Dune Stabilizing Solutions

This life improving project, initiated by the Royal Commission, combines research, construction application, and site survey calibration. This study which was highly appreciated by the Ministry of Transport (MOT) required a close coordination with the relevant Saudi Authorities and Stakeholders such as: Aramco, Ministry of Environment, Water and Agriculture, Saudi Railway (SAR), Saudi Railway Organization (SRO), Presidency of Meteorology and Environment (PME), and King Abdulaziz City.

On the 15th of May 2017, K&A and MoT organized a workshop bringing forward K&A's on-the-ground experience in sand mitigation on Saudi roads and railways with the presence of major contractors and consultants working with MOT.

The workshop was led by K&A's Director of the Geotechnical & Heavy Civil Sector and the Head of Transportation in Riyadh who were the keynote speakers, sharing their experience on the assessment and modeling of sand dune regimes changes on roads and railways.



St Regis Dubai Hotel

The Winner of the "World's Leading New Hotel 2016"

Khatib & Alami (K&A) proudly announces that the St. Regis Dubai Hotel won the "World's Leading New Hotel 2016" at the World Travel Awards Middle East Ceremony 2016 and was named "Dubai's Leading Hotel Suite 2016" in recognition of the Hotel's signature suite, Sir Winston Churchill Suite. K&A was the main consultant of this entire pioneering project from concept design to construction supervision. The St. Regis Dubai is part of Al Habtoor City Hotels Complex, a 5+ star Hospitality Development, located at a Business Bay community which consists of three hotels (The St. Regis, the Westin and the W-Dubai hotels), Water Theater and Festival Dining Restaurants.

The opening of the St. Regis Hotel in November 2015 marked the brand's luxury debut in Dubai. Influenced by the beaux-arts architecture of the original St. Regis New York, K&A designed St. Regis Dubai Hotel with a bright and airy ambiance, impeccable detailing, and luxurious touches, inspired by the 18th century accentuated classical design.



New GIS Enterprise Project Kicks Off at the Duqm Special Economy Zone Authority in Oman

Khatib & Alami (K&A) is pleased to announce the start of a Roadmap and GIS Implementation project with Duqm Special Economy Zone Authority in Oman (SEZAD) to help our client manage the huge amounts of lands, improve asset utilization, and increase customer value.

SEZAD manages, designs, develops, and implements all economic activities and long-term strategies for infrastructural development in Duqm. It also oversees the urban expansion of modern Duqm City, while making it the focal point in the Middle East for potential investors and ensuring it is the rightful place to live, work, and visit. Having closely worked with SEZAD on the awarded construction of a New Port and Dry Dock Complex at Duqm in 2013, K&A is ready to take on this 8-month new project. The implementation of a roadmap will align SEZAD's clear vision and goals across all the different departments and will set the right strategy to reach them. The GIS implementation will consist of developing three web applications to support land management and land allocation workflows in order to

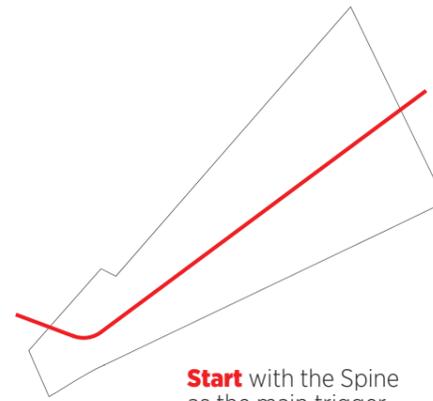
optimize asset utilization and customer value. This project will provide SEZAD with state-of-the-art GIS system that supports their daily operations in line with the organization's vision and mission.



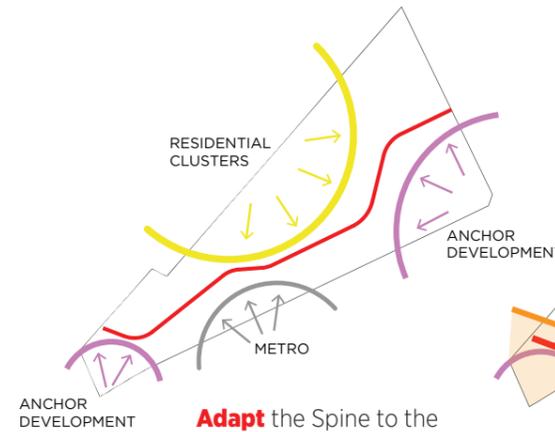
Leveraging on Esri's latest technology, the GIS solution will be built utilizing the Portal for ArcGIS. This includes applications that distribute geospatial data and tasks in simple focused interfaces for ArcGIS, and Operations Dashboard for ArcGIS.

King Abdulaziz

KING ABDULAZIZ CITY FOR SCIENCE AND TECHNOLOGY

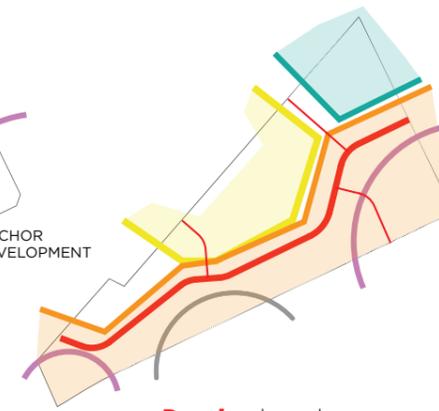


Start with the Spine as the main trigger of the Concept

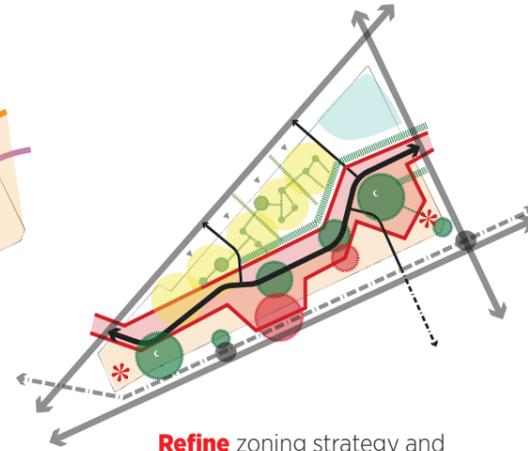


Adapt the Spine to the demands of the site and the project:

- Maximize residential development
- Capitalize on corner anchor developments
- Capitalize on proposed metro station



Develop broad zoning strategy for residential clusters, mixed uses, and educational hub. Refine road network.



Refine zoning strategy and define sub-uses and sub-clusters

A microclimate that offers a secluded pedestrian-friendly and community-oriented development

With uprising urbanization, transportation, and energy challenges, urban innovators at Khatib & Alami (K&A) are looking at sustainable, compact, and smart city planning approaches.

Nowadays, managing, building, and sustaining cities are reflected by a fundamental shift from the old, unsustainable car-oriented urbanism to a new paradigm, where urban hubs and transportation spokes are closely integrated with multimodal and transit transportation network. This leads to the well-established notion of Transit-Oriented Development (TOD).

The concentration of housing, shopping, and employment around LRT stations and transit centers is weaning cities off their dependency on cars along with the financial and environmental costs that come with them, creating high-density nodes at a scale of pedestrian mobility.

KACST: ▶

The next generation of TOD

K&A's trailblazing plunge in TOD commenced in 2008 with the provision of consultancy services for the Economic Cities in KSA, in particular the King Abdullah Economic City (KAEC) that was designed as one of the first Transit-Oriented Developments in KSA.

As the years passed by, the Economic Cities opened the door to K&A to deliver the next generation of TOD projects. The design of King Abdulaziz City for Science and Technology (KACST) mixed use neighborhood in Riyadh ensures the appropriate density and mixed use of two metro stations.

Both connected and secluded, the site is easily accessible yet can become a microclimate that offers a pedestrian-friendly and community-oriented development.

Synthesis: The location and connectivity of the site justify the necessity for a mixed use human-centered development

A HUMAN-CENTERED APPROACH: ▶

K&A's planning & design solutions



**KING
ABDULAZIZ
CITY FOR
SCIENCE AND
TECHNOLOGY,
KSA**



The mixed use neighborhood's design objectives are many: build a synergy with the KACST campus and other neighboring communities; ensure flexibility in the development approach; capitalize on the planned metro stations; and create a unique mixed use development in Riyadh for people to live, work and play.

Located on a 42 ha land, KACST mixed use development will offer places for people to:

- **LIVE:** 850,000 m² in apartments between tight-knit communities and tall mixed use residential buildings
- **WORK:** 70,000 m² of high-end offices
- **PLAY:** more than a third of the site offers an array of recreational activities and open spaces
- **SHOP:** 70,000 m² of retail space split between a mall, a souk, and stand-alone shops that liven up residential streets
- **LEARN:** 44,000 m² International School and 7 Kindergartens that work in tandem within the greater educational hub of KACST

In order to favor a TOD-oriented design approach, the designers replaced the traditional road network with a shared surface – a main spine that varies in character while connecting major project components.

In fact, shared surfaces are becoming increasingly popular as they have proven efficient in promoting pedestrian safety and neighborhood liveliness.

The shared spine was then adapted to the various demands of the site:

maximizing residential development, capitalizing on anchor projects and metro stations. **Broad zoning clusters were then defined:** residential, mixed use, and educational.

The main spine was developed into four characters according to its location and conditions in the site:

- At the gateway of the shared surface, the project entrances will showcase vibrant and narrow retail strips on both sides
- Where the site is the widest, the shared surface spills over courts, plazas, and parks and offers a variety of recreational

and commercial uses; the void around the shared surface could also tighten occasionally in order to accentuate and delineate a retail strip and provide a walking rhythm for pedestrians

- Where the shared surface separates residential clusters from mixed use centers, the space tightens to signal a transition to a more intimate space

As an additional TOD approach, the designers opted to build on the existing and underserved community facilities (mosques and schools) in order to reduce community facility demands within the site and to favor rich public spaces instead.

In light of Riyadh's development pattern leaning towards a less-car oriented city, KACST mixed use development will showcase innovative design development approach, and will serve as catalyst for the city's anticipated urbanization pattern. The new transit stations will be shifting mobility patterns making it possible for people to live without complete dependence on a car for mobility.



ROADS

METRO STATION

PEDESTRIAN

Fighting Water Scarcity

drop
by
drop

We have the tendency to believe that our planet has an infinite amount of water to offer, but in reality, we might be shocked to know that only less than 1% of the world's water can be used for human needs. This amount has to be shared by populations in constant and continuous growth.

The population in Oman, per se, is expected to increase by 2.4 million, between 2015-2040, as per the National Center for statistics and Information (NCSI). Following this exponential growth, water scarcity problems arise due to the high demand on freshwater resources.

In order to avoid such problems, the Public Authority of Electricity and Water (PAEW) in Oman appointed Khatib & Alami (K&A) to provide consultancy services in the design and construction supervision for the reinforcement of Al Sharqiyah Transmission System.

This is a significant project for Al Sharqiyah Governorate that is in line with PAEW's commitment to reinforce the existing transmission system which suffers from serious capacity restrictions. In addition to meeting the population's water demand, the project will benefit several large bulk water consumers, such as Mudaibi Industrial Area's economic development project; educational institutions like Sharqiyah University; and touristic developments such as Ras Al Hadd's Airport.

Throughout this project, K&A will play a key role in developing the preliminary design of the system, optimizing the whole life cycle cost, providing flexibility, reliability and redundancy, preparing the

tender documents for a Design-Build contract by the contractor, and supervising the related construction works. The project's scope includes the detailed design of transmission lines of diameters ranging from 600mm to 1300mm with a total length of 305 km and the preliminary design of new pumping stations with flow capacities ranging from 419 m³/hr to 1,667 m³/hr and new equalizing and strategic storage reservoirs with storage capacities ranging from 10,000 m³ to 80,000 m³.

The reinforcement of Al Sharqiyah Transmission System is a threequel project for K&A, following the Izki Wilayat Water Distribution Networks in Ad Dakhiliya (awarded by PAEW in 2015), and the Water Transmission System project from Sohar to Al Dhahirah Governorate (awarded by PAEW in 2016), a testament of PAEW's confidence in K&A's water innovative solutions and dedicated professionalism.



REINFORCing ELEVATing MONITORing

Enterprise GIS Operations at Kuwait Ministry of Electricity and Water

UP TO THE NEXT LEVEL

After the launching of a turnkey Enterprise implementation for the Ministry of Electricity & Water (MEW) in the entire State of Kuwait in March 2012, today, Khatib & Alami (K&A) is continuing the journey hand in hand with MEW. The launch of the GIS Operation and Maintenance Project will elevate the current GIS system up to new levels of maturity, integration, and operational excellence.



SETTING THE COMPLETE FRAMEWORK

During this project, K&A will focus on adjusting the GIS system's complete framework, including People, Data, Engineering Applications, and Business Processes. This will drive and improve GIS operations at MEW.

The utility will be provided with the latest GIS tools:

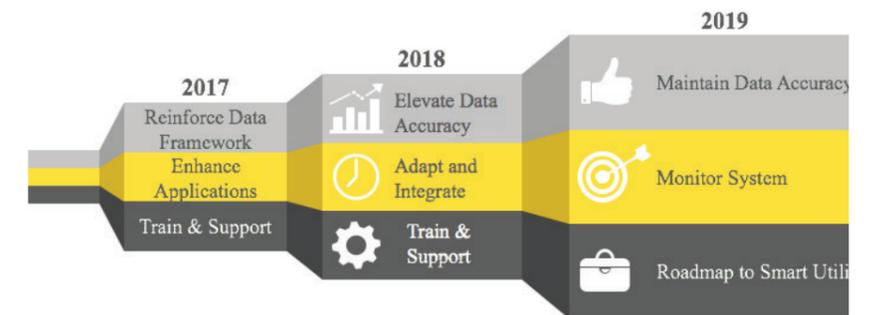
- To facilitate the timely and accurate capture and distribution of network asset information to the entire MEW workforce
- To enable the integration to other Enterprise Systems
- To support users in carrying out their daily activities in an agile and adaptive environment

The aim is to improve the reliability of the services provided, reduce the cost of operation, and support the management of network assets.

MEETING GOALS & OBJECTIVES

Over the coming three years, K&A will supply MEW with one of their best taskforces, assembled with great synergy and a wide range of experiences in project management, utility engineering (electricity and water), network survey, data development, and systems programming.

With the advantage of the previous experience gathered during the core project's implementation, K&A taskforce will work closely with the MEW GIS Team to operate and maintain the utility GIS platform, reinforce data procedures and frameworks, empower daily user operations and activities, expand MEW user capacity, and pave the way for a Smart Utility.



ENVISIONING THE FUTURE

The GIS, being the sole platform for hosting the electricity and water networks, is considered a key enabler for any future digital utility implementation (AMI, DMS, OMS ...).

By the end of this project, K&A will work with MEW to guarantee the GIS data and system's readiness to support such implementations. Based on that, MEW will be able to use the Enterprise GIS System as part of its strategic direction to move into the digital era by adopting a modern, seamless, and cost effective IT infrastructure.

THE "TRAILBLAZER AWARD"

ANOTHER MILESTONE IN K&A'S LONGTERM PARTNERSHIP WITH SCHNEIDER ELECTRIC

Khatib & Alami (K&A) was bestowed the "Trailblazer Award" for finding new ways to work with Schneider Electric (SE) to drive business growth and for working with SE Energy Front Office (mainly in KSA), during the Schneider Electric Link User Conference 2017.

As part of the Partners Track, K&A was recognized as one of the Top 10 partners for SE GIS and was ranked 8th in the overall sales increase in 2016. This marks another key milestone in K&A's ongoing strategic partnership with Schneider Electric.

Celebrating EGYPT:

Golden Age in Irrigation and Hydraulic Engineering



➤ From Left to Right: Dr. Ahmed Helmi, (Irrigation & Storm Drainage-Cairo University) with K&A Cairo's office team.

As part of our continuous commitment in supporting educational institutions and scientific progress, Khatib & Alami had the honor to be one of the Golden Sponsors of the First Scientific Conference on Water Engineering, Irrigation and Environment at Cairo University.

This grand event was held on the 11th of March 2017, a date that marks Cairo University's 200 years of leadership in the engineering field. Over 100 delegates attended this prosperous event where they had the opportunity to meet more than 10 expert speakers and share their own knowledge and experience in the Irrigation and Hydrology fields.

The conference presented a historical journey through the development of irrigation in Egypt, one of the country's oldest engineering sciences that have been studied at Cairo University.

A special attention was drawn to the Irrigation and Hydraulics department's timeline and activities.



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