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The Kuwaiti Digest is a quarterly magazine published by the Kuwait Oil Company (K.S.C.) since 1973.

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As KOC prepares to make 2013 a fruitful and successful year, we can look back on 2012 and be proud of our many accomplishments. For one, our Company has accomplished a great deal in terms of laying the foundations that are required to make our 2030 Strategy a reality, and it gives me great pleasure to say that we have made enormous strides in that regard. From the official inauguration of the new KwIDF facility to the many conferences and training sessions that KOC employees have taken part in, we are on track to meeting all of our future goals and targets.

As we look back on 2012, it is important that we have the wisdom to learn from every undertaking we have taken part in. There is always room for improvement, and it is essential for us to make every effort to better our methods of exploration and production. Part of the 2030 Strategy calls for KOC to be a safer, more efficient exploration and production company. I am proud to say that, across the board, KOC is making every effort to lessen our impact on the environment while increasing production in an efficient and responsible manner. Whether it is through workshops aimed at developing the potential of our employees or through public awareness campaigns, KOC is doing everything in its power to grow our company while protecting our community.

While it is true that oil is Kuwait’s most important export product and national source of revenue, it is not our most important resource. That title, it may be argued, rests with Kuwait’s human potential. Our human capital is our most precious asset, and it is our responsibility to ensure that Kuwait’s next generation of oil and gas professionals are properly prepared for any and all challenges that may be present in the future.

It goes without paying special tribute to the former DMD for Administration and Finance, Khaled Al-Khamees, who also had served as Editor-in-Chief of our periodical publications, including The Kuwaiti Digest. Al-Khamees retired after serving KOC for almost 30 years in various capacities. We shall always remember and entrench his indelible imprint in terms of maintaining and improving the quality of these publications. We wish him the best of luck in all his undertakings. Happy New Year to all.
Under the patronage of His Highness the Prime Minister Sheikh Jaber Al-Mubarak Al-Hamad Al-Sabah, KOC recently held a special ceremony at the Ahmadi Office Complex to commemorate the launch of the Kuwait Integrated Digital Fields (KwIDF), which is the first center of its kind in the world. The ceremony was attended by a number of senior government and KOC officials as well as a number of advisers from the Diwan of HH the Prime Minister.

At the beginning of the ceremony, Minister of Oil Hani Hussein welcomed HH the Prime Minister and highlighted the nature of the work of each of the KPC subsidiaries and their objectives inside and outside Kuwait, noting that KOC was the oldest K-Company. KOC Chairman and Managing Director Sami Al-Rushaid then reviewed the company’s business activities and spoke about a number of the technical aspects it handles.

Meanwhile, Research and Technology Group Acting Manager Maryam Al-Ajmi, and TL (E&P IM), Hamad Al-Zaabi presented a detailed explanation of the nature of the work at the center and its targets.

During the ceremony, HH the Prime Minister expressed gratitude to KOC’s senior officials, adding that Kuwait was proud of its youth who are in charge of this important and vital sector and their efforts to preserve the nation’s wealth.

He maintained that he valued the efforts undertaken by the Company to develop its business and oil exploration activities and underscored that the development of the oil sector is a priority for His Highness the Amir and His Highness the Crown Prince.

Following the tour and explanations provided, HH the Prime Minister unveiled the commemorative plaque to mark the opening of KwIDF, which marks a new beginning for KOC as it moves away from traditional models of field management to instead embrace new forms of technological advancements that will help the Company remain on the cutting edge of emerging technologies.

Meanwhile, HH the Prime Minister expressed his pleasure and pride in the opening of this center, which he said was a step forward in the field of oil production that will help the government make appropriate decisions with the information provided by a fast, accurate and integrated system.
Meanwhile, KOC officials described how advantages associated with the KwIDF project will benefit the Company in a number of ways. They maintained that KwIDF will, in part, do much to decrease the amount of time needed for various tasks in regard to the production aspect at KOC. This, in turn, will not only allow the Company to reap greater financial benefits, but it will also allow KOC to have a lesser impact on the environment. They noted that the improved performances associated with the project will radically change the way in which work is conducted both in the field and within offices. For one, they maintained that KwIDF will have a great impact on the health and safety of KOC employees because of its ability to save time and effort while providing employees with a greater amount of information than ever before which will allow them to make informed decisions and predict problems in ways that were not possible before. This, they said, also falls in line with the KPC 2030 Strategy of creating a safer and more efficient work environment.

In a statement he made following the inauguration of KwIDF, Minister of Oil Hani Hussein expressed his satisfaction with the work that was completed by KOC employees. He also maintained that he believed KwIDF would be able to provide employees with enough information to help allow them to increase production and improve and maintain Kuwait's reservoirs, adding that KwIDF was internationally recognized not only for reservoir management and information generation, but for its importance in terms of safety and the environment, as it allows employees from various centers to work together in one place. He also maintained that KwIDF’s inauguration supported the KPC Strategy to increase oil production to some four million barrels per day by 2020, as current projections indicate that KwIDF will help KOC increase production by somewhere between five and 10 percent. In this context, he said that the objective was not only to increase production, but to maintain Kuwait’s reservoirs and prolong production.

In addition, the Minister of Oil said that he believed KwIDF will be able to provide engineers and geologists with a clear representation of Kuwait's fields, which in turn “will allow them to make the right decision at the right time” because of the real-time information it provides them, such as levels of production and quantities of gas, water, pressure and temperature present.

Meanwhile, DMD Exploration and Production Development Khaled Al-Sumaiti said that he believed KwIDF will play a major role in achieving the KPC strategy of producing four million barrels of oil per day by 2020. He added that similar centers existed in North, South and West Kuwait but that this newest center had the greatest potential in terms of its effect on KOC operations. When asked about the possibility of KwIDF delivering inaccurate or faulty information, Al-Sumaiti maintained that the human element was extremely important as employees are trained to monitor...
equipment and that a system to cross-check readings was in place.
The DMD added that the new digital field system will aid KOC as it engages in relatively new undertakings in regard to drilling, such as horizontal drilling. He maintained that the information KwIDF supplies will also help KOC maximize its production potential by allowing control room operators to more closely monitor reservoirs and wells and determine if more production is possible. He also added that KwIDF does not only use the latest technology that is specific to the oil sector, but added that the latest telecommunications technologies and the most current software was also being utilized at KwIDF. In regard to the staff that will be operating KwIDF, Al-Sumaiti maintained that a number of employees were currently in the process of receiving intensive training so that they could be entirely familiar with all the requirements necessary that operations within the center demand.

**An Overview of KwIDF:**
KOC decided to undertake the KwIDF project so that engineers and geologists could be provided with a means to collect various information and data about wells and fields in real-time that would then be analyzed by specialists so that appropriate decisions could be made in a timely manner.
The center allows collaboration between engineers, geologists and geophysicists who work under one roof in order to make decisions.
The project is unique in the sense that it provides innovative technological solutions which save time and effort in comparison to traditional fields. KwIDF aims to increase productivity and provide optimal management of oil reservoirs, which in turn will lead to increased production for KOC.

The company has a clear vision in terms of training and qualifying the national workforce through this project, which will be managed by Kuwaiti engineers.

KwIDF will be a great resource for the transfer of knowledge and sharing of information, which falls in line with the KPC 2030 Strategy.

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DMD E&PD Khaled Al-Sumaiti presents information to the delegation

KOC officials answered questions the delegation had about the facility

A group photo of KOC and government officials
Kuwait Oil Company Chairman and Managing Director and Acting CEO of Kuwait Petroleum Corporation (KPC), Sami Al-Rushaid, recently inaugurated the first Kuwait Risk Management Conference, which was sponsored by KPC and held at the Holiday Inn in Salmiya. In a speech he delivered to the audience, Al-Rushaid said, “Progress and development, as we all know, are made through a sequence of small steps. Risk and risk-taking are integral to that development. During my time at KPC I have seen many changes – they have most certainly ebbed and flowed. But they are clearly part and parcel of commercial life and are fundamental to the path of progression. Management of these elements has been fundamental to our business success.”

The KOC C&MD also said that businesses of all types need to realize the changing world that we live in and the pace in which new technologies and ideas become outdated, making way for even newer technology and methodologies of work and business practice.

“How would you define your strategy allowing for these uncertainties? It is imperative that the risk-reward equation is evaluated as we both define our strategies and as we plan their execution. Over the next 3 days, we will look to examine the methods, means and processes that are being deployed as best practices in the region and beyond. By so doing, we will all aspire to reduce the uncertainty
that each of our businesses face,” the Chairman said.

An elite group of experts and specialists representing Kuwait’s oil sector and companies renowned for successful implementation of Risk Management Strategy attended the two-day conference.

KPC’s sponsorship of the event stems from its belief in the need for highlighting comprehensive risk management in light of the risks facing companies and institutions in the country, including insurance related problems and recurrent financial crises which negatively impact the economy.

Former KPC CEO Nader Sultan and a number of prominent international oil figures took part in the discussion session during the first day of the conference.
The fourth edition of the Kuwait International Petroleum Conference and Exhibition took place recently at the Hilton Kuwait Resort. The event, which was co-organized by the Society of Petroleum Engineers (SPE) and Kuwait University, was held under the following theme: “People and Innovative Technologies to Unleash Challenging Hydrocarbon Resources.” As part of its main objective, KIPCE aims to explore the ways in which industry professionals can get the most from the industry’s precious resources while discussing the ways in which the skills of professionals can be developed in order to create more successful workplaces. In addition, more than 25 exhibitors from renowned oil and gas companies showcased the latest products and services they had to offer.

The event was held under the patronage of Minister of Oil Hani Hussein; however, KPC CEO Farouk Al-Zanki delivered the keynote speech on his behalf. Before the speech was delivered, Kuwait University Professor and Conference Chairperson Ridha Gharbi delivered his welcome address to the audience. During his address, Gharbi maintained that part of the goal of the conference was to “emphasize that the region is aggressively developing new and existing conventional and unconventional oil and gas resources that have significantly affected the world energy market.” In addition, he said that “KIPCE will maintain its traditional base of bringing together regional and international professionals from all sectors of the petroleum industry to share and discuss their views on current industry topics and trends, exchange expertise and experience, present state-of-the-art technology and innovation, and stimulate further research of technical and business activities.”

Following Gharbi’s address, KPC CEO Farouk Al-Zanki delivered his speech to the audience and told those in attendance that KIPCE was another example of the partnership that exists between major oil companies, governments, and scientific institutions to work closely together.
to come up with the solutions that are necessary to tackle the industry’s current and future challenges.

“We believe that by establishing partnerships with major oil companies, we can deliver a brighter energy future for all,” he said.

However, the KPC CEO added that technology alone was not sufficient without the knowhow and expertise that must be present among professionals working within the industry. In order to create and nurture this knowhow and expertise, he said, it is important for companies to realize the value in creating partnerships with other companies and scientific institutions. In this regard, Al-Zanki maintained that Kuwait was doing much in the way of securing a sound future which upholds the importance of technical expertise and knowhow by building the new Petroleum Training Center. The center, he said, will be built to international standards and provide a channel for KPC employees and subsidiaries to develop their skills and competencies.

The KPC CEO added that as various upstream projects around the world become more and more reliant on technological innovation, their reliance on technical knowhow will increase. It is therefore of the utmost importance for energy companies to be able to adapt to a future where emerging and new technologies will play a major role in day-to-day operations.

“Today, it is more important than ever that we work closely together to ensure that we can adequately supply energy to our growing world. Government, oil companies and scientific institutions will have to join together to produce the solutions that our future requires,” Al-Zanki said.

Prior to Al-Zanki’s speech, 2013 SPE President Egbert Imomo welcomed the audience and discussed the challenges associated with providing more energy to the world in an efficient manner.

Following the opening addresses and speeches, the audience was directed to the exhibition portion of the event, where more than 25 exhibitors, including major players like Chevron, Schlumberger, Halliburton and KPC, had booths set up with information for the audience. The technical program of the conference included an executive plenary session which discussed the conference theme, two panel sessions titled “Unlocking the Potential of Challenging Resources” and “Developing People and Competencies within the Industry,” and more than 40 technical presentations during 14 sessions covering all aspects of conventional resources. Sessions on the development of unconventional reservoirs and intelligent oilfields also took place during the event.

The 2012 Kuwait International Petroleum Conference and Exhibition featured keynote, plenary, panel and technical sessions which assembled high profile executives from upstream organizations who addressed issues of worldwide importance to the industry. Activities which took place alongside the conference included a teacher workshop and student paper contest while the parallel exhibition hosted NOCs, IOCs, and service companies which showcased their latest technological products and services.
Fully aware of the ramifications of obesity, particularly among children, the Kuwait Oil Company has recently organized an awareness campaign on child obesity.

On this occasion, the Chairman and Managing Director, Sami Al-Rushaid, stated that statistics and specialized studies indicate that about 40% of children in Kuwait are obese, which makes them vulnerable to obesity-related ailments such as respiratory diseases, diabetes and its complications, high blood pressure, as well as joint and bone abnormalities joints, in addition to high cholesterol in blood, breathing difficulties, heart disease, among others. Besides, obesity causes numerous psychological and social problems.

The C&MD added that some of these statistics suggest that this ratio may be up to about 60%, especially in recent years, which prompted health experts
to describe this growing problem as a “frightening risk,” hence it requires sounding the alarm. “Furthermore, it is necessary to shed light on the issue, its implications and consequences, and means of prevention,” he pointed out.

Given the seriousness of the problem, Al-Rushaid went on; Kuwait Oil Company initiated a campaign to raise awareness about the risks of obesity in children, as part of its relentless efforts toward contributing to the community. He pointed out that these efforts are basically aimed at addressing this problem in all possible ways.

“The campaign falls in line with similar drives being organized by the Company, for its sense of social responsibility and care for issues affecting the society in all aspects,” the C&MD elaborated.

He called on all to be actively involved in this drive saying, “You are all invited to be positively involved in the activities of the campaign, because you the issue at stake concerns you directly. This is your role and responsibility that I have no doubt you will fulfill in the most desirable manner.”

The C&MD expressed gratitude to the Ahmadi Hospital for organizing this campaign and exerting a lot of effort to come up with a carefully studied program.
As part of its efforts to help do its part in contributing toward a safer society, KOC recently launched a Safe Driving Campaign in Ahmadi in order to create awareness and help spread a culture of safe driving to KOC employees and Ahmadi residents.

The event, which took place at the Unity Center in Ahmadi, was attended by KOC Chairman and Managing Director Sami Al-Rushaid and other senior KOC officials. In addition to KOC senior staff and employees, officials from various government ministries were in attendance, including the Assistant Under-Secretary of the Ministry of Interior for Traffic Affairs, Dr. Mustafa Al-Zaabi. In order to help create safer roads for KOC employees and Ahmadi residents, KOC works closely with various government agencies in order to make a coordinated effort to help reduce the problems associated with traffic and unsafe driving practices.

During the event, KOC C&M D Sami Al-Rushaid reiterated that awareness of the rules and regulations of safe driving was an issue of the utmost importance. He maintained that the growing number of vehicles on the roads and the difficulty to cope with this increasingly exacerbating problem requires KOC to work closely with the Ministry of Interior for Traffic Affairs in order to limit the number of traffic accidents that occur in Kuwait on a daily basis.

Upon launching the KOC-organized campaign on Safe Driving, which has the stated goal of increasing the awareness of employees and contractors while encouraging them to obey existing traffic laws, Al-Rushaid told the audience that KOC had accomplished much in the way of decreasing fatal traffic accidents within KOC’s inner roads. He maintained that KOC’s past traffic campaigns have, in part, contributed to decreasing the average number of serious or fatal traffic accidents on the Company’s inner roads to zero.

Meanwhile, the Assistant Under-Secretary of the Ministry of Interior for Traffic Affairs, Dr. Mustafa Al-Zaabi, thanked KOC’s Management for launching the Safe Driving Campaign and hailed its active role in reducing the number of traffic accidents within its operation zones and the continuous support it accords to the MOI with the aim of enhancing the awareness of traffic rules.

In addition, DMD (WK) Captain Ahmad Al-Rasheed said that KOC’s Management has been preparing for various traffic initiatives for some time and added that it was a shared responsibility to help overcome the traffic problem and spread awareness among drivers.

Meanwhile, an exhibition of the companies supporting the MOI’s efforts to limit the number of accidents was also organized on the sidelines of the Safe Driving Campaign.
Safe Driving Tips:
Most people understand that when you drive, it is very important to obey all traffic laws. This includes following the posted maximum and minimum speed limits, not using your phone while driving, and always wearing your seat belt.

Below are some additional traffic safety tips that you can follow in order to help create a safe driving environment for you and those you share the road with.

**Avoid being rear-ended by another vehicle:**
1. Increase the following distances from vehicles ahead
2. Signal early for turns, stops, and lane changes
3. Brake smoothly and gradually
4. Keep pace with traffic when possible and legal
5. Check mirrors for following distance of other vehicles
6. Before changing lanes, check direction of travel
7. After stopping, keep brake pedal depressed
8. Keep rear lights clean and functioning

**How to choose an alternate path of travel as an escape route:**
1. Importance of maintaining adequate visual lead
2. Select speeds which position vehicle between clusters of vehicles
3. Select a safe lane position within traffic clusters
4. Avoiding multiple hazards
   (1) Identify hazards early
   (2) Predict potential hazards
   (3) Adjust speed and position to avoid potential hazards
   (4) Anticipate and plan escape routes

**Avoiding a collision with the car ahead**
1. Importance of correct vehicle lane placement
2. When to increase following distance:

Senior KOC officials and MOE officials at the event
1. When being tailgated
2. When vision is blocked or visibility is poor
3. When speed is increased
4. When adverse roadway, traffic, or weather conditions exist

3. Momentary distractions - Pick a safe time to look away

4. Look ahead for trouble
   1. Look over and around the car ahead
   2. Check ahead for speed on hilltops and curves
   3. Watch brake lights in adjacent lanes
   4. Start braking early

5. Locations to watch for trouble
   1. Traffic controlled intersections
   2. Approaching crosswalks
   3. Lanes next to parked cars
   4. Parking lot entrances
   5. Interchanges where cars enter and leave
   6. Slippery or ice covered streets
   7. Where children are at play

**Speed**

Speed is regulated by two things: Law (in the posted speed limit) and common sense (you).

1. The posted speed limit tells you how fast you are allowed to drive under ideal conditions. Rain, fog, dust storms, etc. are not ideal conditions.
2. Common sense tells you how fast you should be driving. If you don't use common sense, a police officer may be more than likely to issue you a ticket.
3. Speed limits are not absolute. You must adjust your speed if conditions require it.
As part of its efforts to help foster the growth of a safer and more environmentally sound society, KOC recently organized the sixth annual campaign to clean the Abu Halifa coastline, which falls under the framework of a campaign to preserve the GCC’s marine environment.

The event attracted a number of Ambassadors to Kuwait and a large number of students took part in the campaign as well. The stated aim of the beach cleanup was to strengthen the culture of environmental preservation in Kuwait while creating awareness among members of society about the importance of maintaining natural areas that are free from and unaffected by pollution.

In a speech he delivered on the occasion, KOC C&MD Sami Al-Rushaid maintained that, in part, civilization and progress of nations was measured by their commitment towards the environment.

He shed light on the achievements of KOC employees over the past year, which included voluntary work such as cleaning Kubbar Island and its shores, cleaning the shores of Green Island, and an awareness campaign aimed at families camping in the desert.

Al-Rushaid commended the campaign’s participants, which included individuals from the Autism Center, those with special needs, schools in all districts from the Ministry of Education, the Ministry of Interior, the Public Authority for the Environment, the General Fire Fighting Department, and various subsidiaries of the Kuwait Petroleum Corporation.
In line with concerted efforts to enhance its social responsibility, the Kuwait Oil Company, in coordination with the Korean SK Company and the Ahmadi Educational Zone, has set up a state-of-the-art smart classroom, at Ibn Majed Elementary School in Ahmadi.

Inaugurating this world-class facility, the Governor of Ahmadi, Sheikh Dr. Ibrahim Al-Duaij Al-Sabah commended the initiative, noting that the technology in this classroom will go a long way in boosting learners’ analytical and cognitive abilities. He added that the move is a translation of the Ministry of Education’s strategy of applying new technologies in learning so as to keep pace with advanced nations. The Governor described the initiative as a technological milestone in every sense of the word, while expressing hope that the ministry will adopt this experience and generalize it to all schools across the country.

Sheikh Al-Duaij praised all the parties involved in this project, including the Kuwait Oil Company, Korean SK Company, as well as the school administration, which exerts all possible efforts in order to advance education.

For his part, the DMD for Planning and Gas, Menahi Al-Anzi, who deputized for the Chairman, pointed out that the initiative to establish a smart classroom falls in line with KOC’s contribution to the community. “The class creates conducive environment for learning,” the DMD pointed out.

The Acting Director of Extracurricular Activities in Ahmadi Educational Zone, Mohammad Al-Ajmi, noted that the smart class conforms to the technological advancements in the area of education. He expressed appreciation to the ongoing efforts geared toward this project.

Similarly, the Manager (Gas Operations), Mohammad Al-Otaibi indicated that KOC employed the latest technological tools in Canada, United Kingdom and Australia to establish this class in Kuwait. He noted that the idea of creating this classroom arose when the school asked for modern learning techniques, as he described the initiative as a first step toward transforming teaching and learning approaches.

Al-Otaibi remarked that Ibn Majed Elementary is a time-honored school where many State and KOC officials graduated, including himself. School headmistress Zahra Taqi described the project as dream come true, stressing this generation is IT generation, hence such classrooms catch their attention and imagination. She expressed profound gratitude to the KOC Management for this
laudable initiative, while expressing hope more such smart classes will be set up across the country.

The headmistress further noted that the class will definitely serve teachers and learners alike, in the sense that it will save time and energy and enable students achieve better results. “Imagine that a science teacher was able to deliver her lesson in about just ten minutes,” she amusingly said.

Maha Al-Otaibi, a Social Science teacher at the school, made a detailed presentation on the smart class project and various phases of implementation. She noted that the class is equipped with user-friendly techniques and that it saves time, money and energy.

Al-Otaibi further remarked that the class was set up in conformity to HSE regulations and that it is equipped with surveillance cameras, comprehensive sound systems, an LCD screen, a DVD device and some detectors.

Besides these features, she pointed out; fingers can be used to write with different colors, fonts and auto correction tools. Lessons can be recorded and re-presented and teleconferences can be established with other students within and outside the country.

What is a smart classroom?

It is a classroom that has an instructor station equipped with computer and audiovisual equipment.

Main Components of a smart class:
- Personal Computer
- Overhead Projector
- Wireless Internet Access
- DVD Player
- Smart Board

Smart Board
- A tool to access and annotate a computer
- Mimic the mouse
- Write on the board—with or without computer projection
- Save your notes – share with students.
More than 30 carefully selected speakers and over 200 local and international delegates recently attended the 8th Annual Kuwait Energy and Infrastructure Projects Conference 2012, a four-day conference which was held at the Al-Raya Ballroom of the Marriott Courtyard in Kuwait City. The conference, which was organized by MEED and supported by Kuwait Petroleum Corporation, focused on the challenges and opportunities associated with the expanding energy and infrastructure project sectors of Kuwait.

In addition, the conference presented itself as a forum where major private sector players were provided with the opportunity to discuss various projects and key associated challenges across sectors that include oil and gas, water and power, social and transport infrastructure and finance. The four-day conference included in-depth case studies, keynote presentations by experts from various fields related to energy and infrastructure, panel discussions, one-to-one networking opportunities, and interactive workshops whose purpose was to help participants find practical solutions to the most critical issues faced by Kuwait’s growing energy sector and expanding infrastructure industry. Given the number of industry leaders and government officials participating and in attendance, the event provided an unparalleled opportunity for various parties to develop new business partnerships and learn more about investing in Kuwait’s growing industries. On the first day of the conference, the focus centered on the opportunities and progress in development in regard to exploiting the hydrocarbon sector to optimize Kuwait’s energy resources. A number of speakers from various K-Companies, including Farouk Al-Zanki, KPC CEO, who delivered the keynote presentation, spoke to the audience. On behalf of KOC, Deputy Managing Director (Technical Services) Mazen Al-Sardi spoke to the audience about upcoming capital projects programs.

Edmund O’Sullivan, Chairman of MEED Events, delivered the conference’s opening remarks and reminded the audience that some $55 billion worth of projects are projected to be undertaken over the next decade in Kuwait’s oil and gas and water and power sectors. He also maintained that the economies of the GCC have surpassed the expectations of many by emerging stronger than ever following the economic downturn of 2008.

Following O’Sullivan’s address to the audience, KPC CEO Farouk Al-Zanki took the stage to deliver the conference’s keynote presentation, which served as an overview of the implementation and execution of Kuwait’s 2030 oil and gas strategy. In his presentation, the KPC CEO reiterated the importance of emerging technologies and future, undiscovered technologies can play in the production of oil and gas. He also discussed the ways in which the sharing of information and partnering with bodies who...
have industry know-how will prove to be extremely beneficial for Kuwait, especially considering the country’s ambitious plans to increase production to 4 million barrels of oil per day by 2020 and maintain that figure until 2030. This, he said, will be especially important in the coming years as more than 50% of the world’s energy demand, which is constantly growing, is derived from oil and gas.

In addition to investing and acquiring new technologies, Al-Zanki maintained that Kuwait has billions of dollars’ worth of plans for new projects, which he said includes plans to introduce solar power throughout oil and gas operations and to develop new centers that will raise the level of expertise and knowledge throughout K-Companies.

Afterwards, KOC DMD (Technical Services) Mazen Al-Sardi took the stage to discuss upcoming capital projects that the Company seeks to invest in. During his presentation, Al-Sardi said that he believed KOC’s drilling program was currently one of the most ambitious programs in the world. He maintained that the KPC strategy of increasing production to some four million barrels by 2020 would require a significant amount of investment. A sizeable amount, he said, has already been invested in KOC drilling operations, which he said has grown the number of rigs KOC operates from 20 to 60 in just a manner of years. Much more, however, needs to be invested as KOC plans to increase its number of rigs to about 80 over the next few years. Al-Sardi also maintained that KOC, whose share of Kuwait’s oil production stands at some 3.65 million barrels of oil per day, shoulders the bulk of Kuwait’s oil production, and as such, will need to continue investing in various projects throughout Kuwait so that the objectives of the 2030 Strategy are met.

Al-Sardi maintained that a significant amount of money will also go toward other major projects, such as gathering centers and projects associated with using water for reinjection during production. The DMD also told the audience that KOC plans to increase non-associated gas production to 2.5 billion cubic feet while the production capacity of heavy oil is expected to be developed to some 270,000 barrels per day.

“To move forward and achieve our strategic targets, KOC plans to invest more than KD 13 billion over the next five years in order to execute key capital projects,” Al-Sardi said. He maintained that some of these projects included three new Gathering Centers in North Kuwait, a new Water Center facility in North Kuwait, a new 48” Crude Transit Line from NK to CMM (TL-5), a KOC FEED Pipeline for New Refinery Projects (NRP), the Lower Fars (LF) Heavy Oil Development Center Production Facility with a capacity of 60,000 BOPD, and various drilling activities throughout Kuwait. In his concluding remarks to the audience, Al-Sardi maintained that the KOC Capital Project Program is ambitious and will do much to contribute to the growth of the Company. The program, he said, is diverse and takes into account that one of the major strategic growth programs is the development of heavy oil which is complex and long term.
The SPE International Professionals in Energy Conference (IPEC) was held recently at the Hilton Kuwait Resort. The two-day event was held under the theme of “Empowering Women’s Leadership” and attracted more than 270 delegates representing 53 companies from 15 countries. During the opening ceremony, Ganesh Thakur, 2012 SPE President, said that this was the first conference of its kind organized by SPE worldwide. “SPE has a commitment to helping women in the industry advance and improve their careers, which is what this conference has been developed to do,” Thakur said. “This event offers an opportunity to share success stories and learn from shared experiences.”

The two-day event was inaugurated by Farouk Al-Zanki, Deputy Chairman and Chief Executive Officer of Kuwait Petroleum Corporation (KPC), who delivered a keynote speech on behalf of Minister of Oil and Chairman of the Board of KPC, Hani Hussain. Al-Zanki said that the event was just the beginning of a series of similar events in the future that will focus on the broader topic of women in the oil and gas industry.

“Women currently represent 14% of Kuwait’s oil sector total population, of which, 19% of all managerial and supervisory positions are occupied by women,” Al-Zanki said. “We aspire to see these numbers increase, with more and more women professionals entering the field.”

Al-Zanki talked about the current obstacles and challenges facing the promotion of women in the sector, but he said that they are ready to meet these challenges which should only strengthen and drive them further to achieve our goal. “We must collaborate and work together to overcome these obstacles and share the responsibility of paving the way for future generations,” Al-Zanki said.

Al-Zanki went on to say that Kuwait prides itself on the added value that gender diversity can bring to any organization. KOC, he said, has successfully given women the opportunity to grow and compete on an equal playing field with their male counterparts. In an era where future challenges include the need to replace a growing number of oil professionals who are leaving the industry for retirement, oil companies must seriously consider the full range of the new talent pool that exists. This, he said, includes a significant percentage of competent females, who in Kuwait make up more than 50% of university graduates. “I am optimistic more women will take up leadership roles in the oil sector as we face new challenges. For us to meet our future requirements, we must focus on both the development of our existing human resources and future employees, a significant portion of which will be women. It will be necessary to focus on gender diversity and equal opportunities,” Al-Zanki said, adding that despite a positive outlook for the future, there will also be chal-
Challenges. These challenges, however, should “only strengthen our resolve and drive us further to achieve our goals. We must collaborate and work together to overcome obstacles and pave the way for future generations based on equal opportunity.” Al-Zanki concluded his address by saying that he was confident that the IPEC conference would mark the beginning of a new era in the success of achieving women’s empowerment and would ultimately lead to the success of the industry and a more balanced workforce.

Hosnia Hashim, Deputy Managing Director, North Kuwait, then took the stage to deliver her address and told the audience that it was a privilege and an honor for her to open a conference dedicated to empowering women’s leadership. “This is a giant step forward for us to promote the leadership of our female workforce, and it is not a coincident that this conference takes place in the Middle East, as SPE has organized many workshops and sessions in the region that focus on gender diversity. We should all be proud of this great accomplishment,” she said.

Hashim went on to say that Kuwait cares greatly about the promotion of women into leadership roles. At KOC, for example, the Professional Women Networking (PWN) was established in part to demonstrate to young female employees that there exists a host of female role models that they can look up to. Kuwait, Hashim said, takes the role of women’s leadership very seriously, especially considering the fact that the oil and gas industry will face a shortage of talented individuals in the near future. “Can we afford to not offer women positions in the fields they are interested in if they are qualified?” Hashim asked.

“How do we ensure equality in female leadership? How can we make our industry more appealing to female workers? These topics are some of the problems we face,” Hashim said, adding that the two-day conference would present opportunities for 29 speakers to share their expertise and experiences regarding the role of women in the field of oil and gas.

The Empowering Women’s Leadership event then continued with sessions where panelists representing various companies shared their success stories and experiences which focused on how to achieve a more balanced leadership between the two genders and how to initiate procedures that could see the potential recruitment of more qualified women to various positions. The panel sessions also covered subjects like work conditions for women in the oilfields and attracting and retaining women in the oil and gas industry.

The first panel session was titled “Towards a More Balanced Leadership” and was moderated by Sami Al-Rushaid, KOC C&MD, who told the audience that he was very happy to address the topic of female leadership at KOC, especially considering the fact that there are many women within the Company who are strong leaders and positive role models for younger female employees. In his opening remarks, Al-Rushaid recalled an experience that solidified his belief in female leadership from his time at KNPC as a DMD. “I received a call early one morning informing me that we had a fire at one of our plants, so I rushed to the site, which took me about half an hour to get there. However, when I arrived there – and it was still dark out – I was surprised and shocked when I found a young female engineer there before me. That experience really proved to me that when women in Kuwait join the oil industry, they don’t just do it for a job. They do it because they want a career and because they want to be respected participants in the oil sector. This tells us a lot about the role of women in the oil and gas industry,” Al-Rushaid said.

The KOC C&MD also discussed future energy needs and how oil and gas will supply more than 50% of the world’s energy needs into 2030 and beyond. With the Middle East
being the most important component of that energy supply, Al-Rushaid maintained that the industry must focus on sustainability and the availability of a skilled workforce. He recalled that more than 50% of university graduates in Kuwait are women, and will therefore inevitably play a large role as future leaders within Kuwait's oil and gas sector. Today, at least 17% of new hires at KOC are female, and this trend is growing at a healthy rate, thought the C&MD admitted that more could be done to help increase those numbers and facilitate better conditions for women in the workforce. “In terms of providing women with opportunities, our willingness is definitely there,” Al-Rushaid said, who upheld the valuable contribution women make to the companies they work for. In that regard, he referenced a Harvard study that showed that when women were included in projects, it raised the working team’s intelligence. Furthermore, Al-Rushaid also said that studies showed that companies with women on their teams performed better across the board. “I do not need to be convinced of the merits of gender diversity,” Al-Rushaid said. “However, it has not been an easy journey for women,” he said, adding that the top three factors delaying the progress of women in the oil and gas industry include lack of promotion, insufficient experience, and work-life balance. In his concluding remarks to the audience, Al-Rushaid told the women in attendance that his advice to them was to create their own visions, take charge of their careers, build on their strengths, identify mentors and support networks, and demonstrate that they can lead. Following Al-Rushaid’s speech, Maha Abdul Rahman Mulla Hussain, Chairperson and Managing Director of Petrochemical Industries Company (PIC) discussed her experiences as a woman in a leadership position in Kuwait. She was followed by visiting speakers Andrew Gould, Chairman, BG Group, who maintained that if companies are not hiring women, they are only harming themselves by excluding 50% of the talent pool, and Bernadette Spinoy, Senior Vice President of Refining and Petrochemicals Eastern Hemisphere, TOTAL. The second panel session was titled “Women on Board” and focused on the fact that evidence suggest that companies with a strong female representation at board and top management levels perform better than those without and that gender-diverse boards have a positive impact on the performance. Despite that, studies show that there remains...
an unequal proportion of females to males in director and executive positions in organizations worldwide. By ramping up efforts through educating, advocating, and connecting, the panelists discussed ways to encourage more women to assume leadership positions and seats on the boards. The session shared the experiences of accomplished female leaders, their views on the challenges women face at the top, and the value they can bring to the table as leaders with an aim to inspire others and appreciate the importance of having this balance at the helm. The panelists included Pam Jackson, Deputy Chair PwC UK Firm, Melissa Stark, Global Clean Energy Lead, Accenture, and Clare Harris, Vice President Gas Development and Technical, Qatar Shell.

The third panel was titled “Attracting and Retaining Women in the Oil and Gas Industry” and was moderated by Rima Al-Adsani from KOC. The session included the following international speakers: Khaled Nouh, President Middle East Region – Baker Hughes, Pierre Bismuth, SBC Senior Consultant, Schlumberger, Mary Feeley, Chief Geoscientist, ExxonMobil, Florence Vieban, Geosciences Advisor Middle East, TOTAL, and Marietta Vroon, Specialist Reservoir Modeling Manager, Shell. The panel discussion focused on how the oil and gas industry faces many challenges in discovering, developing, and producing hydrocarbons in a cost-effective manner. However, the challenges the oil and gas industry face by no means stop there, as the industry also relies on potential human resources. This entails pursuing gender diversity and equality. Panelists discussed how the industry must attract women, train them and above all, retain them. During the presentations, panelists discussed the best practices and effective HR policies on how to attract, retain, and develop female employees in empowered leaders.

The “Work Conditions for Women in the Field Session” was moderated by Noha Najem of KOC and focused on the history, evolution, and future of women working in the oil industry and on the field both onshore and offshore. This session addressed the hardships and triumphs experienced by women who have worked in the fields; they shared their experiences, lessons learnt, and advice to women in the oil industry of all levels today. The list of panelists included the following speakers: Ayed Al-Kandary, Manager Development Drilling, Kuwait Oil Company, Intisar Al Kindi, Exploration Director, Petroleum Development Oman, Sam Conner, Regional Manager Asia Pacific and Middle East, ExxonMobil, Nurfitrah Mat Noh, Project Manager, Schlumberger.

The “Future Trends-Better Planning and Development” session focused on future trends in relation to the role of women in the oil and gas industry and the resulting planning and development requirements that are associated with that. In order to meet future needs, panelists discussed how the industry is in constant development of new technologies, continuous investment in human capital, and relentless improvement of processes. Panelists also discussed how women leaders must learn how to find their way to real-time changes and develop the ability to anticipate learning from the experiences of other industry players about the characteristics of such trends and the potential solutions to achieve better planning and development. Panelists included Ramona Graves, Department Head Petroleum Engineering Colorado School of Mines, Sana Bardawil, Regional Communications Director, Shell, Elizabeth Coffey, Managing Director, Spark Leadership Limited, Ganesh Thakur, Vice President, Global Advisor and Fellow, Energy Technology Company, Chevron, Gemma D’Auria, Partner, McKinsey Middle East, Robert Fryklund, VP Global E&P Analysis, HIS, Robert Wood, Director, Centre for Ethical Leadership, Melbourne Business School, and Eve Sprunt, Business Development Manager, Chevron.

At the conclusion of the event, KOC DMD (NK) Hosnia Hashim expressed her gratitude to the event’s participants and organizers for their role in creating a successful forum where the issue of Empowering Women’s Leadership could be addressed and discussed in a warm and receptive atmosphere.

About Society of Petroleum Engineers

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose members are engaged in energy resources development and production. SPE serves more than 104,000 members in 123 countries worldwide. SPE is a key resource for technical knowledge related to the oil and gas exploration and production industry and provides services through its publications, events, training courses, and online resources at www.spe.org.
As part of its efforts to ensure that Company employees are provided with the best possible services and information, KOC recently held its first ever “Women’s Health Fair” at Ahmadi Hospital to promote the general wellbeing of women by providing information to the public related to health, fitness and healthy eating. In addition to serving as a resource for women to collect information pertaining to healthier living, the fair served as a forum where Ahmadi Hospital’s many departments could showcase their services to the public. Hospital departments such as Radiology, Physiotherapy, Obstetrics and Gynecology, Medical Laboratory, X-Ray, Dietary Services, Family Medicine and the Pharmacy Department all had booths set up from where they distributed books and pamphlets and interacted with the public.

Highlights from the fair included the sharing of information related to critical services Ahmadi Hospital provides. Examples included an in-depth presentation aimed specifically towards women which highlighted the importance of eating a healthy, balanced diet. Visitors were also provided with information related to the importance of regular checkups and self-examinations that can help prevent the spread of breast cancer by stopping it before it spreads. In addition, every department from Ahmadi Hospital that had a booth set up was able to interact with the public and educate visitors about their respective branches of work. By working together as a whole, all of Ahmadi Hospital’s departments are able to provide a comprehensive range of services that benefit oil sector employees and their families.

The Women’s Health Fair was inaugurated by a number of senior KOC officials, including DMD (NK) Hosnia Hashim, who maintained that the event was “an excellent initiative from the staff and doctors at Ahmadi Hospital to demonstrate how much they care about the health and well-being of women.” She also said that the fair contributed greatly toward educating women about the importance of regular check-ups to prevent disease and illness, adding that it was her hope that the public in general and women in particular were able to learn from the event and that it would leave a positive impact on all who are conscious and concerned about their health and living healthier lives.
KOC Takes Part in Discover GIS Conference

Kuwait Oil Company employees recently took part in the Discover GIS Conference that was held at Kuwait Regency Hotel. GIS, which stands for Geographic Information Systems, is a system designed to capture, store, manipulate, analyze, manage and present all types of geographical data. At its core, GIS is the merging of cartography, statistical analysis, and database technology.

The aim of the conference was to showcase new technologies related to GIS while providing a forum where those involved with GIS could interact with parties inside Kuwait. The Discover GIS Conference included an exhibition and workshop and featured a number of keynote speakers, including a number of ESRI scholars, in addition to prominent figures from government who delivered speeches and presentations.

Senior Systems Analyst Hussain Al-Shamali from Technical Systems Team of the Corporate Information Technology Group provided a well-received presentation titled “KOC Enterprise GIS Implementation Strategy” at the Discover GIS Conference. In his presentation, Al-Shamali discussed the historical, current and future implementation of Geographic Information Systems in KOC in terms of strategy, methodology and underlying technology. He also explained some of the achievements of developing GIS applications for different Teams and Groups at KOC.

Following Al-Shamali’s presentation, a presentation on “Gas Leakage Management System” was delivered by Derar Baker, Analyst Programmer from Technical Systems Team. His presentation explained the importance of the system and the value it created thanks to its successful attempt to use GIS technology to save lives and properties. In addition to the presentations, a number of GIS applications that were developed at KOC were demonstrated at the KOC booth of the conference exhibition.

The Discover GIS Conference provided an opportunity to highlight GIS and the evolution of the technologies it uses while showing the role GIS has played in its contribution to society. Benefits of the exhibition included providing an opportunity to learn about GIS, educate the community, and provide an opportunity to become acquainted with the institutions and organizations working in the field of GIS.
Lightning is a natural phenomenon which consists of a massive electrostatic discharge which is caused by unbalanced electrical charges in the atmosphere which materialize either inside clouds, cloud to cloud or cloud to ground. The electrical discharge, which is accompanied by thunder, generates electrical strikes with energy levels that are high enough to cause direct damage to life and structures. This is especially true in cases where lightning strikes can lead to fires which in turn lead to the damage of property and injuries to individuals nearby. Typical cloud to ground lightning strikes can be over five kilometers long, and a typical thunderstorm may have three or more strikes per minute at its peak. The incidence of lightning cannot be prevented; however its effects can be minimized.

At KOC, the Operations Technical Services (S&EK) along with the concerned Teams, recently planned a project to install a Lightning Protection System in all S&EK facilities in order to minimize the effects and damage from lightning strikes. This project will cover 14 Gathering Centers, three Gas Booster Stations and two Effluent Water Facilities. The Lightning Protection System at these installations will specifically be focused to ensure the protection of control rooms, electrical substations, flare stacks and tanks.

**Identifying the Problem:**
Kuwait Oil Company has a number of oil and gas productions facilities located throughout the country where the three components of oxygen, heat and fuel are present, oftentimes in high quantities. These components have the potential to initiate a chemical reaction which will increase the possibility of fire when they come together in sufficient quantities, as indicated in the Fire Triangle diagram.

The possibility of fire is normally controlled at KOC by preventing fuel from coming into contact with oxygen or heat. However, the possibility exists that fuel may escape in process plants due to faulty conditions in relief valves, flares and vents, but without sufficient heat, a fire cannot begin. Lightning strikes, however, can play a major role in providing the heat necessary to ignite fuel contamination inside oil and gas facilities where the impact of lightning has the potential to result in major incidents to the Company that can result in major damage to equipment and injury to employees.

**Solving the Problem:**
Lightning has the potential to create different types of damage which in turn requires different types of protection. Therefore, it is important to follow several important steps because there is no single type of protection to eliminate all types of lightning damage.
The first type of protection is to connect various structures and equipment to a grounding system, which is a procedure called grounding. The grounding system must address low earth impedance as well as low resistance. A single point grounding system is achieved when all equipment within the structure is connected to a master bus bar which in turn is bonded to the external grounding system at one point only. Earth loops and differential rise times must be avoided. The grounding system should be designed to reduce AC impedance and DC resistance. The shape and dimension of the earth termination system is more important a specific value of the earth electrode. The use of counterpoise or "crow's foot" radial techniques can lower impedance as they allow lightning energy to diverge as each buried conductor shares voltage gradients. Ground rings around structures are useful. They should be connected to the facility ground. Exothermic (welded) connectors are recommended in all circumstances.

The second type of protection is surge suppression, which sees the installation of a device on each conductor which limits voltage transfer between conductors or between conductors and the ground by designing an over voltage point where any over voltage is grounded, so it does not affect the equipment. Ordinary fuses and circuit breakers are not capable of dealing with lightning-induced transients. Lightning protection equipment may shunt current, block energy from traveling down the wire, filter certain frequencies, clamp voltage levels, or perform a combination of these tasks. Surge suppressors should be installed with minimum lead lengths to their respective panels. Under fast rise time conditions, cable inductance becomes important and high transient voltages can be developed across long leads.

The third type is a Conventional Lightning Protection System which is designed to attract lightning. These functions are achieved primarily though point shape. Conventional LPS (Franklin Rods) are typically installed around the perimeter of flat roofs at distance intervals depending on the height of the rod; this technology is designed to perform as a network on a facility and provide the preferred point of strike. This technology is acknowledged by International Standards to be suitable for all break wall buildings and most steel structure. These lightning rods, now known as air terminals, are believed to send Streamers upward at varying distances and times according to shape, height and other factors. Different designs of air terminals may be employed according to different protection requirements. For example, the utility industry prefers overhead shielding wires for electrical substations. The final type of protection against lightning is a Non-Conventional Lightning Protection System, such as Charge Dissipation Terminals (CDT) which are designed to lower the accumulated charge of Upward Streamers by creating a space charge using a fuzzy air terminal installed on essential structures such as control rooms and substations, and Early Streamer Emission Terminals (ESE) where a passive Air Terminal connected to a power supply that is designed to react towards the changing electromagnetic fields and improve the production of Upward Streamers formulating a stronger electrostatic field.

Results
For the best and most effective results for Lightning Protection Systems, a hybrid protection system including a well-designed low resistance connection from the earth to the components is essential. This provides a high level and up-to-date defense mechanism, considering the routine inspection and maintenance for grounding and surge protection.
To meet the goals and strategic objectives of Kuwait Oil Company, the Information Technology Group has taken many initiatives into consideration over the years and has aggressively pursued a program of datacenter consolidation technologies. “Server and Database Consolidation with Virtualization” was one of these key technologies which the Information Technology Team in CITG started in 2006. It is still operational and aims to reduce the operating cost of the data center at KOC.

Consolidation with a virtualization environment is an approach to the efficient usage of computer server resources in order to reduce the total number of servers or server locations that an organization requires. In order to drive our data center to be more efficient, it is very important to look at our existing servers and identify the outdated and old ones and see if they can be replaced with new servers. But instead of replacing an old server with another new one, it would be more economical and less expensive to embark on a consolidated project in which some of our applications can be hosted within one server. Due to a rapid increase in demand for the technology to run business processes at KOC and the user’s need to conduct their business processes, CITG adopted many applications to fulfill the requirements of users. Over the years, this increased the complexity of maintaining IT data centers as many computing servers were introduced to satisfy computing demands. This also increased demands for more floor space and increased power consumption, which led to extra spending on the Operating Expenditure and Capital Expenditure.

One way to lessen the number of servers and reduce complexity is to consolidate many servers into one server and thus have many applications run on one server.

Benefits of Server Consolidations

There are many benefits that can be achieved by adopting Server and Database Consolidation. Here are some of the benefits:

1. Smaller number of physical hardware servers:

   By reducing the number of physical hardware servers, this will save the Company money and will lead to reducing hardware maintenance costs. Lowering the number of hardware servers will reduce energy needed to power the servers, thus minimizing electricity consumption. By doing so, the heat generated by the servers will be reduced and accordingly it will lessen the emission of CO2, (carbon footprints). A carbon footprint measures the total amount of greenhouse gases emitted as a result of our daily activities, and it is culprit that influences global warming and climate change. Minimizing CO2 emissions is good for the environment and is the foundation for a green IT. In addition, it is one of the major objectives and initiatives CITG took upon itself in order to help the environment.

2. Increase the space utilization efficiency of the data center:

   The space needed (computer room) to host the physical centralized server will be smaller and this will lead to less specialized power, less energy usage and less air conditioning consumption.

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**Submitted by: Hussain Hraish & Fatma Al-Otaibi, TPL Specialist I (Information Technology Operations)**
3. **Segregate applications by giving each a virtual environment:**

By having each application within its own virtual server, you can prevent one application from impacting another application when upgrades or changes are made.

4. **Speed up new server deployments:**

Developing a new virtual server can be easily built or duplicated from an existing server. Speeding up server deployment will definitely save time and money. This can be utilized for a new application that needs to be deployed, but hardware is not available or to deploy a test environment that is quickly needed. Part of CPUs and memory with other peripherals like network cards, etc. can be utilized to create a new server.

5. **Multiple flavors of Operating Systems (OS):**

A single hardware platform can host multiple operating system technologies. (i.e. Windows Server 2007, Linux, Windows 2007, etc.). While multiple versions of the same OS can be accomplished on SPARC processors with built-in virtualization software, multiple flavors of OS (Windows, Linux, even Solaris) can only be achieved on hardware with Intel X86 based processors.

6. **Enhance Security:**

By consolidating many servers into a few, we are providing fewer points of entries for security hackers to enter. It is easier to manage, patch and monitor a consolidated server with fewer points of entries than monitoring many servers with many points. It is also easier to fix a consolidated server in case of vulnerability and/or attack.

7. **Reduce cost of licenses and software:**

The number of licenses for Operating Systems licenses and databases licenses will be
decreased as the number of hardware servers lessens. This will result in large savings in regard to the cost of licenses and the maintenance of such licenses. Many small databases can be converted into schemas and then can be incorporated within a major database. Users will not feel any difference accessing a schema within a database from accessing the whole database.

**Disadvantages of Server Consolidation**

The merging of many servers into one server will result in having one source of electricity. Accordingly, if there is a power failure to such a server, it will affect many applications and many databases. A single-point-of-failure can be overcome by having a redundancy and disaster recovery setup for the consolidated server thus resulting in a High Availability environment.

Other disadvantages can be outlined by the following:

1. **Requirement of a specific and different kind of skills:**
   Having a consolidated server will require specialized skills from both System Administrators and Database Administrators. Administrators are required to understand consolidated and virtualization technologies. Maintaining such a complex environment requires specific training for the technology itself and the tools that support and come along with such technology.

2. **A challenge to manage:**
   A change to one environment (application) of a consolidated server may impact another application and any change to one application should be done after identifying the effect on the other applications.

**Success of Consolidation & Virtualization Solutions within KOC for Major Systems such as E-beams and Finder**

In the past a business application on the UNIX computing environment required more than one single dedicated hardware server to run; one server for the production application, one for the test environment and maybe another for the development environment and then finally another server will sit ideally as a standby. Now, as a part of the Information Technology Team’s plans to modernize the servers’ infrastructure, all these scattered servers are being replaced by one consolidated High End Class server. Another server is used as a clustered server for high availability. This setup provides a state of the art active computing environment. Example before the implementation of e-beams we had 3 separated hardware servers for the MMMS (Passport)
environment. When Material Management & Maintenance System (MMMS) was replaced by E-beams (MAXIMO) have consolidated the three servers into one scalable server to host many copies of the applications, databases, and web applications by using operating system virtualization technology, and currently the servers is working on a load balance environment in which if one application fails others will continue running without any downtime. In addition to the live production server another server was implemented with a Real Application Cluster (RAC) environment, from Oracle, for high availability and business continuity. A Test and Development environment were installed on the same live and production server.

Such setups have resulted in huge savings for the Company while increasing the flexibility of the following:

- Less number of servers
- Less number of licenses and less paid for software maintenance
- Improved IT resource utilization to meet the service level
- The flexibility to meet changing business demands
- The ability to dynamically allocate processing power

Currently, we have been working with the E&P Information Management Team to migrate Finder from the existing old server into a newly implemented consolidated server that will host a new and higher release of the Finder application. In addition to Finder, the server will host other applications and databases for real-time and data warehousing applications/projects.

Next year, we plan to move the Finance & Human Resource and Document Image Management System and P2ES (Enterprise Energy Management solution for E&P companies) applications along with their databases from their existing hardware into one consolidated server.
EnergyWise is making it possible to map energy usage to the finest granular level, the endpoint device. This means that we can account for almost all sources of energy use. That offers incredible visibility into the energy activities in organizations’ data centers. Information gathered by EnergyWise becomes the basis for making decisions about how everything should be controlled. EnergyWise allows for the building of an extended system of intelligence that can analyze information collected and make the automated, proactive decisions necessary to direct energy to exactly where it is needed at any given moment.

Challenge

In response to rising energy costs, the proliferation of end devices, government directives, and environmental concerns, businesses are focusing on both understanding and controlling energy usage. Even if initiatives to procure energy-efficient equipment have been made, judicious usage and proactive monitoring are also imperative. From the energy consumed by PCs, servers, switches, routers to the heating and cooling in buildings and data centers, operational efficiency, sustainability, and expenditures need to be monitored more accurately.

Organizations shall realize the opportunity and need to participate in a solution that ultimately decreases energy usage across their IT and building enterprise. However, choosing a solution that can measure, manage, and monitor energy efficiency surfaces concerns surrounding:

- Coordinating power management: To optimize organizational power consumption, IT and facilities management systems need to be managed and measured.
- Reducing energy consumption: The Department of Energy (DoE) estimates that PCs left powered on are only in use for 9% to 15% of the time; organizations shall seek a more comprehensive solution than a simple, out-of-the-box setting.
- Improving efficiency and reducing operational expenses (OpEx): Apprehension surrounds whether becoming energy-conscious will burden the IT department and affect end-user productivity.
- Monitoring and regulating consumption: As an organization’s business and green policies change over time, employees need to easily retrieve information about energy consumption and adjust devices and operations accordingly.
- Bridging the gap between IT and facility management: Enterprise buildings account for 25% of total energy consumption.

Opportunities exist within Enterprise IT to cut energy OpEx. Within buildings, IT equipment and heating, ventilation, and air conditioning (HVAC) consumption accounts for 25% and 75%, respectively. An energy management solution needs to not only address but eliminate the need for separate IT and building energy systems.

Today organizations face higher global energy costs and more stringent corporate, industry, and government compliance regulations. Environmental concerns continue to escalate and organizations need to implement solutions that do not mandate a substantial investment or affect productivity.

EnergyWise Benefits

EnergyWise reduces consumption across entire corporate infrastructures. It is an innovative solution that uses the network intelligently, helping customers...
actively manage and reduce power consumption, promoting company-wide sustainability. EnergyWise harnesses the power of the network to identify, manage, and reduce energy consumption and lower energy costs, further allowing to:

- **Reduce deployment costs:**
Organization can set up, deploy, and configure EnergyWise quickly and easily, with minimal ongoing administration. EnergyWise automatically detects and assigns all supported devices to the proper group and policy, with customizable rules. Organization gains superior control of administrative privileges via role-based security, and IT patch management reliability is increased with the robust, enterprise-class, “Wake on Wide Area Network (WAN)” feature. Before power down, EnergyWise ensures completion of software updates and patch jobs.

**Augment energy consumption:**
EnergyWise can help an organization increase energy savings by optimizing power policies and through its reporting tools that provide intelligence. EnergyWise also silently installs and configures PC clients, remotely wakes office PCs on demand, and allows end-users to defer or skip power state transitions. Business applications are methodically shut down and activity checks are performed, further conserving energy.

**Promote company-wide sustainability:**
Organization needs to promote company-wide sustainability by reducing energy consumption across the entire corporate infrastructure. EnergyWise affects more than 50% of global greenhouse gas (GhG) emissions created by worldwide building infrastructure. Organization must create compelling management-level charts that communicate energy savings and environmental impact while increasing the visibility of organization’s green IT efforts.

**Centralize monitoring and control of devices:**
Organization can monitor and control PoE devices, including switches, routers, IP phones, and access points (APs), and desktop and laptop PCs through a single administrative console. EnergyWise allows you to orchestrate energy management of all supported devices with EnergyWise technology, on demand or via scheduled policies. IT can access control of desktop and laptop PCs immediately.

**Provide compelling, easy-to-use reporting:**
EnergyWise uses comprehensive, event-based reports to facilitate easy configuration, troubleshooting, and problem resolution. Organization can easily analyze and optimize power policies by using operational reports that trend power state changes and actual end-user activity.

**Communicate more easily:**
EnergyWise allows organization to communicate easily with diverse endpoints, with network intelligence acting as a proxy. With future enhancements,

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**EnergyWise Saving Based on 5,000 Employees, Working 9 Hours per Day, 5 Days per Week**

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<th>Annual Energy Cost by Device</th>
<th>EW Annual Saving</th>
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<td>IP Phones</td>
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<td>30-50%</td>
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**Opportunity in Enterprise IT to Cut Energy OpEx**

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<td>Transportation</td>
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<td>**TOTAL ENERGY</td>
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<td>**</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td><strong>CONSUMPTION</strong></td>
<td><strong>ENTERPRISE</strong></td>
<td><strong>BUILDING</strong></td>
</tr>
<tr>
<td>Buildings</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
organization can understand power by device type, device label, and device location. For example, a management station can ask the EnergyWise network to summarize the power of desktop IP phones within a single building. EnergyWise understands which devices are IP phones, where the IP phones reside, and which ones are designated with the desktop.

**Return on Investment**

EnergyWise’s real-time measurement capabilities can give organizations enhanced visibility into energy savings across the entire organization, including specific places in the network such as the campus, branch office and data center. EnergyWise also changes the value-chain of IT by placing the intelligent network squarely at the center of how companies reduce GhG emissions across their entire organization.

EnergyWise can be rolled out in three phases to improve IT and building system energy utilization. In the first phase, Network Control, EnergyWise manages the energy consumption of IP devices such as phones, video surveillance cameras and wireless APs.

The second phase, IT Control, expanded industry support of EnergyWise on devices such as PCs, laptops and printers.

In the final phase, Building Control, EnergyWise extended to the management of building system assets such as HVAC, elevators, lights, employee badge access systems, and access control systems.

With Organization’s Return on Investment (ROI) in mind, EnergyWise allows you to:

**Eliminate unoccupied energy waste:**

EnergyWise solution monitors employees’ use of their devices in their office space or their PC, immediately impacting ROI.

**Quantify power usage with of Business Value Calculator:**

Organization can measure the network usage of organization’s connected devices, such as desktop PCs, laptops, IP phones, APs and IP cameras. This demonstrates how a network infrastructure with EnergyWise can help reduce power consumption and avoid GhG emissions while still delivering outstanding performance.

Organization can estimate potential savings and ROI with Green Business Value Calculator.

**Increase savings in OpEx through partnerships:**

Broad partner ecosystem over different partners offers OpEx savings through a number of innovative solutions that will impact organization’s ROI.

Organization can choose to
low power and sleep state configurations during daytime hours to reduce energy usage from unattended PCs.

Reduce energy costs and consumption:

With EnergyWise, IP connects every critical system, making the network a natural control plane for energy management. IT increasingly plays a crucial role in reaching cost savings.

Conclusion

Organizations seeking to reduce energy costs and increase efficiency require enterprise-wide management and coordination. With EnergyWise, IP network connects every critical system, making the network a natural, energy-control planet, allowing disparate systems to communicate and synchronize.

Using the network as a control plane for energy reduces complexity and costs, and assures power savings. Using the network as the center for energy intelligence, EnergyWise discovers EnergyWise-manageable devices and enables the measurement and control of energy between management applications and endpoints. Information collected using EnergyWise allows organizations to obtain an at-a-glance view of current energy consumption, savings, and impact on profitability.

EnergyWise can also:

- Administer the energy requirements of new and existing PoE devices
- Extend power management to desktop and laptop PCs
- Add new power save plus modes to IP phones, enhancing power savings
- Expand management to high-power devices, such as virtual desktops and compact switches

Energy management helps businesses:

- Establish energy efficiency benchmarks for physical infrastructure
- Improve IT infrastructure, data center, and facilities efficiency
- Fine tune electrical usage to realize significant cost savings
- Speed deployment of building energy management solutions

EnergyWise gives IT a foundation for unprecedented energy usage visibility and control, directly through switching and routing platforms. It delivers real cost savings with differentiated capabilities to help meet compliance and sustainability mandates.
The Emergency Number “160” was created in order to offer Fire, Security and Ambulance Services through one simple number. Kuwait Oil Company emergency services operate 24 hours a day, 365 days a year and can be accessed by all users inside the Company and throughout Kuwait.

The emergency call system was designed as a centralized system. It handles a large number of phone calls which are all recorded with exact time stamps. It is equipped with technology that allows services to be delivered in a timely manner and with the highest quality of service.

Features:

ACD Call Routing
ACD stands for Automatic Call Direction, which automatically routes calls to agents or extensions based on agent skill/priority. ACD will direct the call to a queue for a workgroup to handle.

Submitted by: Majed Al-Huwailah, Snr. Engr. Telecommunications, Communications & Networks Team

Figure 1: Emergency No. 160 Architecture
**Call Recording (Voice)**

The recording of all calls made for emergency services within the Company is a critical component of Emergency No. 160. The recording system, which is integrated with emergency services, is reliable and features a flexible design that offers proven call recording technologies. The calls that are made from hotlines and radio channels that are answered by emergency response coordinators are also recorded.

**Screen Pop-Up Application**

This application has been developed recently and installed on the Emergency No. 160 system for the Building Maintenance and Ambulance Units.

**What is Screen Pop-Up?**

Popped-up windows appear on agents’ computer screens when a call arrives. The call center agent can instantly see the callers five digit extension and essential information such as name and location of the caller even before answering the call or the moment the call is established.

**Screen Pop-up for Emergency No. 160, Building Maintenance Reception & Ambulance Unit**

With this application installed on the agents’ computers, the agents do not need to ask the caller for his or her information. The data collected from the existing callers database (Telepath) appears on-screen when the telephone rings and remains on the screen during and after the call (see Figure 2).

**KOC Call Services**

Unifying all support services into one number, the users can easily access any support services they need. They only need to remember a single phone number and follow the Voice Menu. It is like having a “virtual receptionist” which has merged all support services into one unified number for any support services such as IT Helpdesk, Ahmadi Hospital Services, HR Services, Financial Services, Building Maintenance and Telephone Operator.

**How does it Work?**

The end users will only dial 180. The call will be routed to the virtual receptionist wherein the users can follow the voice menu until it reaches the desired service/s (see Figure 3).
The $1 Billion Mission to Earth's Mantle

Humans have sent probes into the depths of space and we are currently planning to return soil samples from Mars, but when it comes to exploring the land deep beneath our feet, we have only scratched the surface of our planet. This may be about to change with a $1 billion mission to drill 6 km (3.7 miles) beneath the seafloor to reach the Earth's mantle - a 3,000 km-thick layer of slowly deforming rock between the crust and the core which makes up the majority of our planet -- and bring back the first ever fresh samples. It could help answer some of our biggest questions about the origins and evolution of Earth itself, with almost all of the sea floor and continents that make up the Earth's surface originating from the mantle. However, in order to reach those samples, the team of international scientists must first find a way to grind their way through ultra-hard rocks with 10 km-long drill pipes - a technical challenge that Damon Teagle, one of the project co-leaders from the UK's University of Southampton calls, "the most challenging endeavor in the history of Earth science."

The task will be all the more difficult for being conducted out in the middle of the ocean. It is there that the Earth’s crust is at its thinnest at around 6 km compared to as much as 60 km on land. Geologists have already identified three possible locations - all in the Pacific Ocean - where the ocean floor was formed at relatively fast spreading mid-ocean ridges, says Teagle.
The hole they will drill will be just 30 cm in width all the way from the ocean floor to inside the mantle - a monumental engineering feat. "It will be the equivalent of dangling a steel string the width of a human hair in the deep end of a swimming pool and inserting it into a thimble 1/10 mm wide on the bottom, and then drilling a few meters into the foundations," says Teagle.

To get to the mantle, scientists will be relying on a Japanese deep-sea drilling vessel called Chikyu, first launched in 2002 and capable of carrying 10 km of drilling pipes. It has already set a world-record for the deepest hole in scientific ocean drilling history, reaching 2.2 km into the seafloor. What makes the task even more difficult is that, currently, the drill bits have a limited lifespan of between 50-60 hours before needing to be replaced, meaning drilling could take many years unless technology improves.

The first attempts to reach the Earth's mantle actually began back in the early 1960s. Dubbed "Project Mohole" after the Croatian meteorologist Andrija Mohorovicic who first discovered the boundary between the Earth's crust and mantle, a team of U.S. scientists managed to drill a few meters into the oceanic crust off Guadalupe Island in the eastern pacific. The achievement was recognized by a telegram from President John F. Kennedy but the project was closed down in 1966. Since then, a Russian-project in the far north Kola Peninsula during the 1980s has taken over the record for the deepest borehole ever drilled, reaching 12 km into the earth's crust.

And in 2011, the oil giant Exxon Mobil recorded an even longer borehole at just over 12 km in eastern Russia. However, it wasn't drilled vertically downwards and only reached soft sedimentary rocks.

While neither of these record-drilling projects got close to the Earth's mantle, they did give the geologists leading the new project -- The Integrated Ocean Drilling Program (IODP) -- confidence that recent advances in drilling techniques have made their plans more feasible than ever before. "Many of the technologies required are conventional deep-drilling technologies that are presently being used in the oil and gas industry," explain IODP geologists. However, given the challenges and the likely cost of $1 billion plus, much of which still needs to be raised, skeptics may question the necessity of the mission.

As well as the technical achievement of bringing back samples, the samples themselves will clarify many of the assumptions we have about how our planet works. Despite making up 68% of the Earth's mass, we only have a reasonable idea of what the mantle is made of and how it works. "The mantle is the engine that drives how our planet works and why we have earthquakes and volcanoes and continents. We have the textbook cartoons but detailed knowledge is lacking," Teagle said.

The Japanese government has already invested substantially in the project through the construction of Chikyu, with some scientists regarding the mission as the country's "moon project." If Japanese support can be combined with other funding, Teagle says they could start drilling before the end of the decade, making it possible for humans to finally reach the Earth's mantle by the early 2020s.
For many years, employee transactions such as Absence, Duty Leaves, Movements, Overtimes, and more have been processed through the Production Operation Personnel System (POPS). This was a standalone system designed to meet Asset HR needs, which required direct manual input of data, some of which was already held within the Oracle system. The increasing duplicate data entry between POPS and Oracle HRMS (Human Resources Management System) was found to be at an unsustainable level while demonstrating significant inefficiencies at an additional cost.

HR South & East Kuwait Team initiated a project, in conjunction with all relevant teams including IT, to study the feasibility of moving the POPS functionality to Oracle HRMS, by developing a new module - the Production Operation HR module known as POHR. This project ran from December 2010 to August 2012 and included full testing of the new system between February - August 2012.

As part of the study, a cost and time benefit analysis was undertaken. The outcome of this study showed that over 320 hours of labor could be saved per month by removing the duplicate data entry. This equates to over KD 5,000 per month cost savings for KOC.

Other significant benefits of moving to an integrated system within the Oracle infrastructure include:

- Single sign-on with Oracle system
- Secured access
- Same architecture as Oracle E-business suite

These activities are entered in POHR, whereas Duty and Leave (Contractual, Marriage, Hajj, etc.) entries are taken directly from the HRMS system. Awareness sessions for section heads in three Assets have been held during August and September to familiarize everyone with the new process for data entry and updates. Detailed training for all HR staff responsible for data upkeep has been implemented prior to “going live” in September.

### A Brief Statistical Analysis of the POPS & POHR System:

<table>
<thead>
<tr>
<th>Oracle HRMS</th>
<th>POPS (Standalone)</th>
<th>POPS (Integrated with HRMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees information Exists</td>
<td>To be re-entered in POPS</td>
<td>No Entry Required</td>
</tr>
<tr>
<td>Leaves entered in Leave workflow</td>
<td>Leaves to be re-entered in POPS</td>
<td>No Entry Required</td>
</tr>
<tr>
<td>Duty entered in Duty Leave workflow</td>
<td>Duty Leaves to be re-entered in POPS</td>
<td>No Entry Required</td>
</tr>
<tr>
<td>Concurrent Exists</td>
<td>POHR: Allowance Process</td>
<td>Staff Allowances, NWA and pay 2nd off are retrieved separately and then consolidated to single sheet</td>
</tr>
<tr>
<td>Concurrent Exists</td>
<td>POHR: Batch Creation</td>
<td>All allowances to be formatted according to DATA LOADER, and then manually uploaded to batch</td>
</tr>
</tbody>
</table>
information from HR will be displayed here that helps in data integrity between HRMS and Asset Data.

Data Redundancy in POPS:
The details that follow are available in HRMS. They are displayed in POHR, but re-entered in POPS to match the data with HRMS: New Job Creation, Nationality Code Creation, Employee Creation, Employee Personal Data like Name, Dependents, contact information, Nationality, etc., Assignment Details like Job, Grade, Position, Organization, Employee Qualification, Promotions, SOP.

Benefits of POHR
• Single Sign-on with Oracle system (Self Service login)
• Oracle secured access
• Same architecture of E-Business Suite
• Data integrity with Oracle HRMS
• Payroll Integration
• Reduced data redundancy
• Highly Controlled Data Validation
• Data Accuracy
• Cost Saving
• Time Saving
KOC employees who were instrumental in the realization and success of POHR include the following: Waleed Al-Shuaib – Manager Support Services (S&EK), Waleed Al-Rumaih – Team Leader Human Resources (S&EK), Eman Hamza – Snr. HR Officer, AbdulSalam Malik - TPL Specialist I (Inf Technology), Shamlan Al-Hasawi – Snr. Controller HR.

If you have any questions or concerns regarding this new system, please do not hesitate to contact your local HR team for further information.

Process Flow Representation:

POPS:
- Engagement
- Insert information in POPS
- Insert movement for the employees
- Shift worker
- Day worker
- Generate POPS system
- Update the information after generate
- Manually insert all the information in Oracle system

POHR:
- Activate KOCNO in POHR
- Insert movement for the employees
- Shift
- Day
- Process Allowances
- Run Concurrent Process to create Batch in ORACLE HRMS system
- Movement
- Absense
- Leaves
- OPDD Training
- Over time
Magnets Could Help Clean Up Offshore Oil Spills

Just months after the BP oil spill began researchers and scientists from MIT unveiled the Seaswarm – an autonomous robot that can navigate the surface of the ocean to collect surface oil and process it on site. Now, they’ve come up with an even simpler solution: a method for separating oil from water using magnets. MIT’s new technique mixes water-repellent ferrous nanoparticles into the oil plume, then utilizes a magnet to simply lift the oil out of the water. According to a recent release, researchers envision that the process could take place aboard an oil-recovery vessel, to prevent the nanoparticles from contaminating the environment. Afterward, the nanoparticles could be magnetically removed from the oil and reused. It’s believed that this ability to recover and reuse the oil would offset much of the cost of cleanup, making companies like BP more willing to foot the bill for their mistakes. However, the use of tiny nanoparticles is seen by some as controversial. As well as being complex and difficult to use on a large-scale, there are concerns they could damage marine life, if accidentally released. While their impact on the environment is still largely unknown, scientists such as David Andrews from the U.S.-based Environmental Working Group (EWG), say their use should be limited. Others suggest the magnetic technique would be better suited to small-scale use and that existing alternatives such as skimming are still better suited for tackling large-scale offshore oil spills.

New Plastic Light Bulbs are Cheap, Bright, Shatterproof, and Flicker-free

A team of scientists from Wake Forest University in North Carolina have developed plastic light bulbs that are shatterproof, flicker-free, and seem to last forever. Furthermore, these plastic bulbs are about twice as efficient as fluorescent bulbs, on-par with LED bulbs, and - perhaps best of all - they produce a color and quality of light that “can match the solar spectrum perfectly.” These new bulbs are based on field-induced polymer electroluminescent (FIPEL) technology, with a twist. FIPEL is a fairly old technology that involves running electricity through a conductive polymer to produce light - but not enough light to be used as a light bulb. Now, by doping the polymer with carbon nanotubes, Wake Forest has increased the polymer’s luminance by about five times, putting it into light bulb territory. The new device, invented by David Carroll of Wake Forest, consists of three layers of polymer/nanotube material with dielectric layers sandwiched in between. When
electricity is applied, electrons excite the electroluminescent polymer to emit light — and the carbon nanotube doping seems to increase the amount of light emitted. As far as longevity goes, Carroll says he has a FIPEL in his office that has worked for a decade. The most likely reason for such incredible immutability is because FIPEL produces only negligible amounts of heat — almost all of the electrical energy is converted into light. Without heat as a continual stressor, the polymer will probably remain stable for years.

**Artificial Brain Passes IQ Tests**

Researchers at the University of Waterloo, Canada, have built the world's most sophisticated artificial brain to date. Known as 'Spaun' (short for Semantic Pointer Architecture Unified Network), the model is able to simulate complex brain behavior and is capable of thinking remembering, seeing and interacting with its environment using a mechanical arm. Although Spaun currently exists in the simulated world inside a computer, it is one of the most advanced models ever created by scientists to understand how the human brain functions. Unlike previous brain models, which feature large networks of neurons with generally limited functions, Spaun's 2.5 million neurons are designed to mimic our own brain's structure with a prefrontal cortex, basal ganglia, and thalamus that allow it to 'think' about its environment and respond to the patterns it encounters. A collaboration between neuroscientists and software engineers, Spaun receives its visual input via a 784 pixel digital camera this is relayed to its 'thalamus' which performs the same function it would in a human brain: processing the data it receives. Once processed, the data is stored in Spaun's neurons and directed to its basal ganglia which selects the appropriate action it should perform. Using this system, Spaun has been able to perform well in a variety of IQ-testing tasks, including a test which demonstrates its understanding of numerical concepts.

**Data from Large Hadron Collider Suggests Collisions May Be Producing a New Type of Matter**

Unexpected data from the Large Hadron Collider suggests the collisions may be producing a new type of matter. The new observation suggests the collisions may have produced a new type of matter known as color-glass condensate. When beams of particles crash into each other at high speeds, the collisions yield hundreds of new particles, most of which fly away from the collision point at close to the speed of light. However, the Compact Muon Solenoid (CMS) team at the LHC found that in a sample of 2 million lead-proton collisions, some pairs of particles flew away from each other with their respective directions correlated. "Somehow they fly at the same direction even though it's not clear how they can communicate their direction with one another. That has surprised many people, including us," says MIT physics professor Gunther Roland, whose group led the analysis of the collision data along with Wei Li, a former MIT postdoc who is now an assistant professor at Rice University. It has been theorized that proton-proton collisions may produce a liquid-like wave of gluons, known as color-glass condensate. This dense swarm of gluons may also produce the unusual collision pattern seen in proton-lead collisions, says Raju Venugopalan, a senior scientist at Brookhaven National Laboratory, who was not involved in the current research. Venugopalan and his former student Kevin Dusling theorized the existence of color-glass condensate shortly before the particle direction correlation was seen in proton-proton collisions. While protons at normal energy levels consist of three quarks, they tend to gain an accompanying cluster of gluons at higher energy levels. These gluons exist as both particles and waves, and their wave functions can be correlated with each other. This "quantum entanglement" explains how the particles that fly away from the collision can share information such as direction of flight path, Venugopalan says.
Heartburn is a feeling of burning, warmth, heat, or pain that often starts in the upper abdomen just beneath the lower breastbone (sternum). This discomfort may spread in waves upward into your throat, and may result in a sour taste in your mouth. Heartburn is sometimes called indigestion, acid regurgitation, sour stomach, or pyrosis. It is not caused by problems with your heart, although sometimes heart problems can feel like heartburn.

Heartburn may cause problems with swallowing, burping, nausea, or bloating. These symptoms can sometimes last up to two hours or longer. In some people, heartburn symptoms may cause sleep problems, a chronic cough, asthma, wheezing, or choking episodes. Heartburn usually is worse after eating or made worse by lying down or bending over. It gets better if you sit or stand up.

Heartburn occurs more frequently in adults than in children. Many women have heartburn every day when they are pregnant. This is because the growing uterus puts increasing upward pressure on the stomach. Symptoms of heartburn and symptoms of a heart attack may feel the same. Sometimes your heartburn symptoms may mean a more serious problem and need to be checked by your doctor.

Dyspepsia is a medical term that is used to describe a vague feeling of fullness, gnawing, or burning in the chest or upper belly, especially after eating. A person may describe this feeling as “gas.” Other symptoms may occur at the same time, such as belching, rumbling noises in the abdomen, increased flatus, poor appetite, and a change in bowel habits. Causes of dyspepsia can vary from minor to serious.

Causes of heartburn
Heartburn occurs when food and stomach juices back up (reflux) into the esophagus, which is the tube that leads from the throat to the stomach. This process is called gastroesophageal reflux. Common causes of reflux include:

- Incomplete closing of the valve (the lower esophageal sphincter, or LES) between the esophagus and the stomach.
- Foods and drinks, such as chocolate, peppermint, fried foods, fatty foods, sugars, coffee, carbonated drinks and alcohol. After heartburn occurs, the backflow of stomach juices can cause the esophagus to become sensitive to other foods, such as citrus fruits, tomatoes, spicy foods, garlic and onions. Eating these foods may cause more heartburn.
- Pressure on the stomach caused by obesity, frequent bending over and lifting, tight clothes, straining with bowel movements, vigorous exercise, and pregnancy.
- Smoking and use of other tobacco products.
- Prescription and nonprescription medicines, such as aspirin, ibuprofen, prednisone, iron, potassium, antihistamines and sleeping pills.
- A hiatal hernia, which occurs when a small portion of the stomach pushes upward through the diaphragm, which is the muscle that separates the lungs from the abdomen.
- Stress, which can increase the amount of acid your stomach makes and cause your stomach to empty more slowly.

Mild heartburn occurs about once a month. Moderate heartburn occurs about once a week. Severe heartburn occurs every day and can cause problems such as
trouble swallowing, bleeding, or weight loss. Heartburn with other symptoms, such as hoarseness, a feeling that food is stuck in your throat, tightness in your throat, a hoarse voice, wheezing, asthma, dental problems, or bad breath may be caused by a more serious problem, such as gastroesophageal reflux disease (GERD). A persistent inflammation of the lining of the esophagus occurs in GERD and can lead to other health problems. Heartburn may also be related to an infection with Helicobacter pylori (H. pylori) bacteria.

Persistent heartburn symptoms can be a sign of a more serious medical condition, such as severe inflammation of the esophagus or cancer of the stomach or esophagus. Heartburn is more serious when it occurs with abdominal pain or bleeding.

• Abdominal pain, especially pain located directly below the breastbone, may be a sign of more serious problems, such as heart disease, peptic ulcer disease, gallbladder disease, a tear in the esophagus, or inflammation of the stomach (gastritis). For more information, see the topic Abdominal Pain, Age 11 and Younger or Abdominal Pain, Age 12 and Older.

• Vomiting of blood may mean bleeding in the digestive tract, often from the esophagus or stomach. If you have bleeding in the esophagus, stomach, or part of the small intestine attached to the stomach (duodenum), stools may be dark red or black and tarry. Large amounts of bleeding can lead to shock, a life-threatening condition.

Heartburn in children
Almost all babies spit up, especially newborns. Spitting up decreases when the muscles of the esophagus, which is the muscular tube that connects the throat to the stomach, become more coordinated. This process can take as little as six months or as long as one year. Spitting up is not the same thing as vomiting. Vomiting is forceful and repeated. Spitting up may seem forceful but usually occurs shortly after feeding, is effortless, and causes no discomfort. Children who vomit frequently after eating during the first 2 years of life have increased chances of having heartburn and reflux problems, such as GERD, later in life. Children with reflux problems also have increased chances of other problems, such as sinusitis, laryngitis, asthma, pneumonia, and dental problems. For more information, see the topic Nausea and Vomiting, Age 11 and Younger.

Treatment
The treatment of heartburn depends on how severe your heartburn is and what other symptoms you have. Home treatment measures and medicines that you can buy without a prescription usually will relieve mild to moderate heartburn. It is important to see your doctor if heartburn occurs frequently and home treatment does not relieve your symptoms. Check your symptoms to decide if and when you should see a doctor.

Tips on preventing heartburn
• Place 6 to 9-inch blocks under the legs at the head of your bed to raise it.
• Try to eat at least 2 to 3 hours before lying down. If you take naps, try sleeping in a chair.
• If you smoke, quit.
• Lose weight if you're overweight.
• Don't overeat.
• Eat high-protein, low-fat meals.
• Avoid tight clothes and tight belts.
• Avoid foods and other things that give you heartburn.
The CITG Group recently launched the “Way Finding & Conference Room Reservation System” in the Main Office Building, which is a system that is comprised of 20 screens located at various locations throughout the building, specifically at building entrances and in front of conference rooms.

The “Way Finding” solution was designed to help visitors reach a person, room or public area in the building in a fast and efficient manner. The building’s design, the database of building occupants, entry and exit points and floor plans were used to design the system while multiple screens at different locations are used to guide the visitors to their destination. The visitor can search the database for building occupants, room numbers, conference rooms, public places, entries, exits and more. The system then guides the visitor by easily indicating the path to the destination he or she intends to visit.

The system can also be used to display messages during an emergency or evacuation drill with direction to the nearest exit. This feature will help occupants exit the building easily and in an orderly manner if the need arises. The system is also designed to be user friendly by providing a simple method to update details of the building’s occupants.

In addition, the Conference Room Booking System can be used to book a conference room by entering the required details from the screen in front of the conference room or from the central location in the Office Administration. The screens located in front of the conference room displays the meeting in progress with details as entered during booking. This system will avoid any interruption during a meeting as the screens will turn red while a meeting is in progress. Moreover, this system eliminates the need for actual paperwork to register the conference room. The system even keeps track of space utilization with the analytics console that measures and reports reservation patterns. For simple management of the system, the administrative console allows system managers to configure, update, and monitor all of their Room Wizards from a single interface.

Future upgrades will also enable the system to be linked to Microsoft Outlook, LDAP, resource booking such as catering, request for PA systems, CIT Support and more from any screen located in front of the conference rooms.

The Corporate Information Technology Group, in the next phase of this project, is planning to implement the same system in Office Complex buildings and other locations. Users will be able to book these conference rooms from any location within the Company by using Outlook Integration.
Kuwait recently celebrated the golden jubilee of the signing of its constitution with a fireworks display which earned it a place in the Guinness Book of World Records. The display of fireworks, said to be the most expensive ever at a cost of approximately $15 million, took place on Kuwait’s seaside from Kuwait Towers and down the Gulf Road.

“I am happy to verify that with 77,282 fireworks, a new Guinness world record has been set tonight in Kuwait City,” said Carim Valerio, a representative from Guinness World Records, who made the announcement on KTV at the end of the display.

Tens of thousands of Kuwaitis and expatriates made their way to the seaside along Gulf Road where the one-hour fireworks and laser display was staged to mark the 50th anniversary of the constitution. Before the celebration, HH the Amir Sheikh Sabah Al-Ahmed Al-Sabah addressed the nation and told Kuwaitis that Kuwait has an unwavering commitment to democracy and called for national unity.

About the Kuwaiti Constitution:
In June of 1961, HH Sheikh Abdullah Al-Salem Al-Sabah announced that he would establish a constitution for Kuwait. In December, elections were held for a Constituent Assembly, which then drafted a constitution promulgated as Law No. 1 on November 11, 1962.

The constitution opens with the declaration that Kuwait is "An independent sovereign Arab State," and its people are " Apart of the Arab Nation." Islam is " the religion of the state," and the Sharia (Islamic law) is " a main source of legislation."

Although granting HH the Amir substantial power, the Kuwaiti Constitution also provides for political participation by the citizens. The system of government is defined in Article 6 as "democratic, under which sovereignty resides in the people, the source of all powers." Articles 79 to 122 establish the National
Assembly and lay out the rules governing its formation, rights, and duties.

Individual rights protected by the constitution are extensive and include personal liberty and equality before the law, freedom to hold beliefs and express opinions, and freedom of the press. The residences of citizens are inviolable, the torture and the deportation of Kuwaiti citizens are prohibited, and the accused are assumed innocent until proven guilty. Also guaranteed is the freedom to form associations and trade unions. The constitution guarantees the independence of the judiciary and designates the Supreme Council of the Judiciary as its highest body and guarantor of judicial independence.

The constitution also grants citizens a number of social rights, which form the basis for Kuwait's extensive welfare system. The state is constitutionally obligated to care for the young and to aid the old, the ill, and the disabled. It is obliged to provide public education and to attend to public health. The constitution provides for state involvement in the national economy to the degree that these obligations necessitate. However, Articles 16 through 19 protect private property, stating that "private property is inviolable" and reminding citizens that "inheritance is a right governed by the Islamic Sharia." Article 20 stipulates that "the national economy shall be based on social justice. It is founded on fair cooperation between public and private activities. Its aim shall be economic development, increase of productivity, improvement of the standard of living and achievement of prosperity for citizens, all within the limits of the law." Duties of citizens include observance of public order and respect for public morals.
Work being conducted inside a KOC Workshop, 1956