SIAPARTNERS

مركز محمد بن راشد للابتكار الحكومي
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Innovations From The Nation

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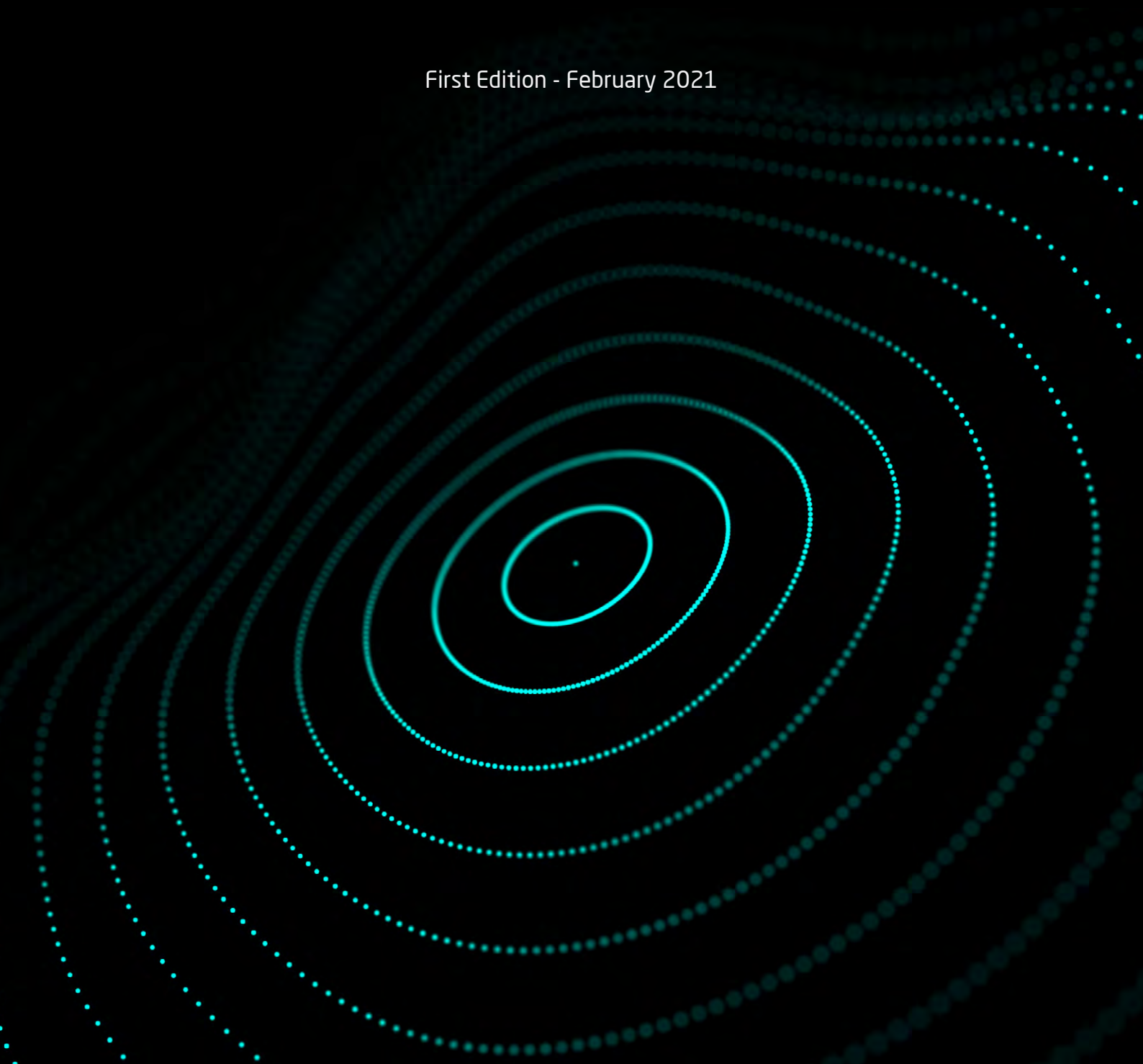

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Introduction

In today's world, the pace of change is accelerating and so are the uncertainties. It is time for governments to shift from analysis to implementation in order to be updated with the latest developments and global trends. This can be achieved by using innovative tools to identify the risks and opportunities of the future trends, collaborating with creative minds to develop ideas and turn them into viable plans that can positively affect individuals and communities.

2020 represents a year of transformation. At the time of publishing this report, the world is enduring vast disruptive forces that are challenging our fundamental assumptions. On one hand, the pace of technological advancement keeps accelerating in the light of the fourth industrial revolution, helping to deliver positive outcomes and impact. On the other hand, the hyper-connectivity, which is a by-product of this development, has blurred physical and digital frontiers, increasing the risks of global events, such as the case of the COVID-19 pandemic. From cloud platforms and Big Data to the Internet of Things and Smart Government, the language of governments everywhere reflects the new and improved services that now harness advanced technologies to deliver better services. Like never before, technology is being integrated with public sector operational and governance processes to create new and innovative products, processes and policy innovations.

Moreover, strong leadership and a drive from governments is imperative to make innovation a norm in the government. Such a case is observed in the UAE. The UAE government has been intensifying its efforts towards enhancing the innovation capabilities at the federal and local levels and multiple achievements have been made on this front. Today, the UAE is the most innovative country in the Arab World and one of the top three countries in the Northern Africa and Western Asia region, according to the Global Innovation Index 2020.

In late 2019, The Mohammed Bin Rashid Centre for Government Innovation invited all Federal and local Government entities to collect and capture UAE government innovations.

The level of participation in this effort exceeded our expectations, highlighting the efforts that governments across the UAE exert to make innovation a daily practice. We were able to collect more than 550 innovations from 128 entities, with 25% coming from the Federal Government and 75% from local governments across the seven Emirates. A team of experts assessed these submissions using detailed and comprehensive criteria that looked at key qualities such as novelty, replicability, and impact. As a result of this assessment, a team of experts was deployed to conduct field studies and document the highest rated innovations. The report includes 25 of the best innovations implemented between 2017 and 2020, and forms a record of the commitment of government entities to disseminate and institutionalize a culture of innovation.

Also, the report conveys stories of developing the innovations from acceleration to implementation, highlighting the processes, resources and stakeholders involved, as well as the role of entities' leadership in facilitating the teams at cultivating their ideas into innovative and feasible projects.

We hope that these innovations will inspire those who have a passion and desire to make their country a better place.

Summary

Solar PV

Noor Abu Dhabi is the world's largest single-site solar project. It covers an area of 7.8 square kilometers and features more than 3.2 million solar panels, producing 1177 MW of DC power. The project enables increased production of renewable energy and reduces reliance on the use of natural gas for electricity generation, resulting in a carbon footprint reduction of 1 million metric tons per year, which is equivalent to taking 200,000 cars off the road.

This is a 60% government and 40% foreign joint venture with an intent to promote local and international investment.

The Noor Abu Dhabi project has many innovation aspects, such as the evaluation methodology, the usage of winding transformers with 500 MVA connected to a 220kV grid station, robots for cleaning and more. The station has 4 types of Monocrystalline PV (Photovoltaic) modules used: 355W, 360W, 365W & 370W where conversion efficiency is up to 18.57%.

Ajman Integration Framework

Department of Digital Ajman has developed a unified communication platform for all its anchor points that helps local authorities in the Ajman government and Federal Agencies, as well as the private sector, in the process of providing services in an integrated and coherent way. It also helps exchange data between the systems of participating parties smoothly and easily. This enables customers to get the services within one digital gate.

As a result, the platform created a "big picture" window for the integration map of 29 entities, which can serve 100,000 transaction per hour over 140 integration points. The Application Programming Interface is designed to support large-scale, multichannel digital scenarios, helping reduce costs, increasing efficiency and enabling 24/7 operations by consolidating back-end data sources into a scale-out, high-performance digital integration hub. Thus, when the second implementation phase was launched in 2019, 500,000 transactions were completed successfully.

Self-service kiosk

The Ras al-Khaimah Public Prosecution Department (PPD) invented a device to provide all customers with an access to the services they want within a few minutes from anywhere in the emirate. The solution is an advanced kiosk formed by a printer, a scanner, an ID placeholder, a fingerprint reader, a camera and a full HD screen. Customers can use their UAE Pass and personal credentials to access the kiosk. The services are available in Arabic and English.

If a customer wants to access a service in a kiosk, they have to choose the language, enter the Emirates ID card and their fingerprint for identification. A customer should also enter the case number and type, if applicable, after which the services can be accessed via the interactive screen. The whole process takes from 15 to 30 minutes, including the fee payment and confirmation phase.

Thus, the kiosk helped to decrease the attendance rate of the customer in person to the PPD and increased the customer and the employee satisfaction rates.

3D Printing for congenital heart anomalies

Three-dimensional (3D) printing for congenital heart anomalies is a joint application of cutting-edge medical imaging technologies and emerging techniques of 3D design and printing in a clinical setting. The project provides examples and guidance that can be applicable in other fields of clinical medicine, helping transform the way surgery will be performed in the future.

3D modelling and printing greatly supports advances in individualized medicine and surgery providing surgical solutions drawn from 3D models to patients previously deemed inoperable. In congenital cardiac surgery, 3D models and printed prototypes offer advantages of better understanding complex anatomy, hands-on preoperative surgical planning and emulation, improving communication within a multidisciplinary team and patients. The solution often adds important new anatomical findings and prompt alternative operative scenarios.

FEDLIMS

FEDLIMS is as a customised electronic laboratory information management system for technical and management operations related to forensic processes. It is used to manage digitally 207 types of tests within one automated laboratory system. It can be used to collect requests from all police stations across the UAE, where it is currently providing a full range of services to Abu Dhabi and limited services to other emirates. It is an end-to-end platform to integrate all processes and services of the forensic department directly to customers.

The program includes a number of subsystems, the most important of which are the quality system, storage management system and the system for monitoring the competence of workers, in addition to all administrative and technical processes for forensic evidence checks.

The system has helped to reduce around 34000 hours of work within 6 processes, leading to 8.6 million AED savings per year and bringing multiple other tangible and intangible improvements.

FEDLIMS is highly related to the strategic priority of Abu Dhabi Police "Combatting Crime" (ADP1) particularly the strategic objective: "Optimal use of forensic evidence" which is consequently linked with the strategic objective of the Ministry of Interior: "enhancing safety and security". The system has expedited the transfer of applications, data and test results through an electronic system ensuring confidentiality. This contributes to combating crime in a faster way that serves to enhance the security and the safety of the country. In addition to that, the system is also linked to the 5th strategic priority of Abu Dhabi Police (ADP5): " A policing organization that is managed effectively and efficiently", because it is related to the strategic objectives: " Effective management of operations", " Effective financial management", " Developing effective partnerships" (because the project is related to partners such as Judicial Department and other police entities) and finally the objective related to the governance.

UAE PASS

UAE PASS is the first national digital identity for citizens and residents of the UAE. The mobile based digital identity, accessed through a smartphone application, enables all registered individuals to access more than 5000 government, semi-government and private sector entities' services through their respective websites and apps, It allows to digitally sign documents and transactions and provides a digital vault feature, which allows users to request and store government issued credentials and documents for usage in recurring transactions.

Originally verified only through card and fingerprint scanning, the digital identity will soon be securely verified through Facial Recognition technology, making the UAE the first country in the world to authenticate a national digital ID fully virtually. With UAE PASS, over 250,830 verified users can connect with more than 95 different entities across all of the emirates. Currently, more than 5,000 services can be accessed through 200 different channels and Telecommunications Regulatory Authority (TRA), Smart Dubai, and Abu Dhabi Digital Authority (ADDA) are continually working to connect more entities and services to the platform.

Criminal Map

Criminal Map is a solution that is used to visualize data, analyze and assess criminal behavior over geographic space, while delivering statistics based on city, crime, nationality, gender, age and education level. Examining where crimes occurred determines which areas attract offenders and where unknown offenders may reside.

The solution adopts AI and big data to analyse over 10 thousand cases in the electronic criminal system to build heat maps for analysing risks and tends, decision-making, following the chronology of the procedures, creating statistics and crime prevention.

The solution helped build more than 33 reports submitted to Attorney General and gave more control in managing the workload in all prosecutions. More than 12 precautionary measures were taken based on supplied data. Also, the rate of theft crimes reduced from 2,220 in 2018 to 1,823 in 2019.

AD Locker/ My Wallet

The AD Locker, as part of TAMM initiative under the Government Accelerators Programme - Ghadan 21, provides a platform that consistently combines different kinds of information across the government entities, including user documents and payments.

It is a centralised platform that pools user's information and documents in once place. It collects up to 50 different types of digital documents, provides a platform to carry out more than 70 payments and follows up the status of around 350 services provided by Abu Dhabi government entities.

To retrieve and re-use user documents, it uses blockchain as part of the distributed ledger concept that eliminates bureaucratic, time-consuming paper work.

Using digital documents eliminates allows to pull the necessary information and makes the necessary updates accordingly. Through AD Locker, a user can update, cancel or renew documents with no need to visit a government entity. A user can see real-time updates and solve his enquiries on AD Locker. It sends immediate notifications after changes and can trigger a follow up action if needed.

Attestation Digital Platform

The solution represents a digital platform with a comprehensive list of all Judicial Department services that can be automatically filled into the pre-approved templates submitted by customers instead of open text spaces for manual submission. It also allows to use the Emirates ID card to automatically fill in the sections of the forms related to personal information.

For example, to issue a notarization certificate and representations, the platform extracts the personal details from the ID card and sends an application for approval automatically. The platform also provides customized versions of the documents to be attested as needed by the requesting entities. This reduces the possibility of issuing certificates that may not be compatible with the requirements of other entities.

As a result, the usage of paper was reduced by 90%. Also, electrical energy consumption reduced, as well as visits to service locations and transportation. The customer happiness rate increased to 95.7% due to reduced waiting time, reduction of error and increased efficiency.

DED Blockchain Initiative

The DED blockchain-based solution is a collaborative effort of the relevant entities to streamline the process of setting up and operating a business, roll out digital exchange of trade licenses and related documentation for all business activities, and ensure regulatory compliance across Dubai's business ecosystem.

The Innovation Project is phased to cover all key stages of customer journey in obtaining the business license including "Operations Commencement" during the post setup stage as well as all critical requirements related to operating a business, e.g. license information sharing, opening bank account, participation in foreign trade, conducting end-to-end transactions.

The project is integrated and synchronized with existing registration systems of participating licensing entities and connectivity to other blockchains. The flexible design of the blockchain network enables a consortium member to join the network based on their infrastructure hosting preference.

Currently the innovation has the information about the Company Registration, Trade Name, Business License, Business Activities, License Members, License Address, and Contract Details.

Electronic Family Book

Most of the government entities around the UAE are required to deal with the family book, which contains information about Emirati national's family members. The Federal Authority for Identity and Citizenship (ICA) solution is to provide an electronic platform, where government entities can connect and extract the family book data automatically. The data is retrieved as metadata with auto-verification. This helps to eliminate the risk of fraud and data entry errors.

All services related to the family book are automated and digitized, making them available through the mobile application and the ICA portal. This allows users to view, edit and apply for the services at any time without the need to attend the service centers for submitting their application.

The solution significantly helped to facilitate the family book data exchange between government bodies and UAE citizens electronically without the need for paper registration, reducing the queues of customers at service desks and helping ensure the maximum level of security, integrity and reliability by using the Emirates ID and storing the family book details inside a SIM card.

Portable Computer System

Abu Dhabi City Municipality established a complete system for transferring different surveying data between the office and the field and vice versa.

The Portable Computer System is an innovation that enhances daily surveying processes by automating all stages of office and field work activities, which further increases productivity and time efficiency. It also enhances current processes by means of adopting the latest state-of-the-art software and hardware, allowing to perform daily duties more efficiently.

The solution, involves a physical mobile device to be taken into the field providing access to 8 services related to plot showing, setting out, tools checking and surveying.

As a result of broad implementation of the technology, the number of transactions done by a single surveyor has doubled. The number of transactions lasting over 2 days decreased from 12,084 in 2018 to 2,084 in 2019. The quality of data increased significantly by reducing human errors in typing and generation of automated reports with 100% transparency, leading to the reduction of paper usage to 0%.

Chatbot for Tenancy Contract services

In order to decrease the effort, cost and time needed to manage a Tenancy Contract, Al Ain Municipality developed a chatbot that is based on an AI platform containing all data related to the service of registration of rental contracts and general information. The virtual agent can handle multiple user queries at the same time with no time lag. The bot can collect authorization remotely by, for example SMS, and update user data through integration with federal authorities.

It can understand customer inquiries and questions as well as learn from each transaction using Natural Language Processing and Machine Learning. The chatbot is able to access information through multiple sources, finalize transactions with customers, and escalate complex queries to customer service agents.

The chatbot can be made available through the municipality website, the mobile app, Facebook Messenger and WhatsApp for Business.

When fully launched, the solution is expected to increase the service availability time and reduce the time of service completion, in addition to improving customer journey.

My Rights Game App

My Rights is a mobile application game that is based on international human rights standards for children and laws of treatment of children in the UAE, focusing on three aspects: right for education, right for health, and right for security. It targets children 4-12 years old and educational institutions. It is direct and simple, which makes it attractive. It is designed to allow a child to learn gradually as they pass different stages of the game.

Children currently spend a lot of time on smart devices, which are more influential in building their personalities and enhancing their knowledge in comparison to traditional learning methods. Thus, it becomes easier to deliver CDA messages by providing good content for a child, cultivating the basic values of human rights and presenting them in a way that is entertaining.

The game has been displayed in multiple venues and on many events. As of 30 Sep 2019, 4541 downloads have been made. Surveys have shown that the application has helped increase children awareness about their rights in the selected areas.

Smart Rehab Lab (Robotic Therapy Laboratory)

The Smart Rehab Lab is the first integrated project in the Middle East where 11 robotic devices are taking the responsibility for providing most of the rehabilitation services needed by people of determination. The lab serves around 100 clients from different age groups (as of March 2020), providing intensive physiotherapy and occupational therapy services with help of high tech, AI and robots. It allows to provide the required exercises with the support of stimulating VR games.

The patient is evaluated and treated with the help of smart therapeutic programs and automated limbs that mimic the patient's limbs (arms and legs) in all joints and movements. Each movement is tracked by wearables that synchronise with the computing systems that use AI to adjust the training in real time based on responsiveness of the patients.

As a result, the lab has helped to increase the number of beneficiaries, improve the quality and efficiency of work, save costs and reduce paper consumption, among other benefits.

Dugong and Seagrass Research Toolkit

The Dugong and Seagrass Research Toolkit is an initiative by the Environmental Agency – Abu Dhabi (EAD), TOTAL, Total Abu Al Bukhoosh and the UNEP/CMS Dugong MoU that provides an easily accessible online decision-making tool to guide the selection of specific dugong and seagrass research recommendations to adopt in specific circumstances.

The toolkit is openly available online to multiple researchers and organisations with mandates for coastal and marine research and conservation, considering the threats and human community factors. It supports researchers in the process of setting and refining their objectives, while considering overall conservation management goals and budgetary restraints, as well as factors such as time scale, spatial scale, technical capacity and specific challenges on the ground.

In order to use the tool, a user has to open the designated website, press 'Launch Toolkit' and follow a simple process tree that leads to practical recommendations.

Since launching in March 2017, the website was reached by 3,200 users from 119 different countries for a total of over 10,000-page views.

Hayat - 'Life' Application

'Hayat' is a free-of-charge application that can be downloaded on smartphones on iOS and Android platforms. It has a vast database of organ donors and potential recipients throughout the UAE, which is linked to the licensed public and private hospitals throughout the country.

The application uses AI and blockchain to store the data of people wishing to donate their organs after death and use it when appropriate in the most effective way.

The application also allows registered users to receive the latest news about the overall state of organ donation in the UAE and various related activities.

Organ donation and transplantation programs have saved the lives and improved living conditions for 62 people in the country. Moreover, 27 organs were donated to patients in KSA.

As of today, there are 1,515 available potential donors, and the numbers are constantly increasing.

Donation Cards

The Donation Cards aim to replace traditional donation channels that are widespread in Dubai. The traditional way of donating money is through physical desks and donation boxes in supermarkets, malls, government buildings, etc. IACAD introduced cards that are placed near supermarket cashiers, allowing customers to buy them as another consumer items bundled within their grocery purchases. In addition, each card has a very specific typology and does not represent a generic donation to the charity, instead helping to allocate a donation to a specific cause. The donation is settled directly by the supermarket to the charity, without triangulating the money through IACAD or other organizations.

The Donation Cards allow to reduce several cost items associated to the traditional donation desks and improve the logistics associated with cash donations. Additionally, they are reusable: a cashier puts them back on the display shelf, reducing the number of printed cards.

In a two-month pilot conducted within one supermarket branch, there were 330 donations registered using this new donation mechanism.

Distributed Acoustic Technology

RTA was the first Metro worldwide to utilize the Distributed Acoustic Technology in Metro systems with the fiber cables that have sensitive vibration sensors. The technology uses optical fiber to act as both the sensing element and the transmission medium along the 80 kilometer metro railway. The optical fiber sensors allow operators to detect in real-time any item drop on the rail track. Centralized notifications are enabled at the Operations Control Center (OCC), enhancing operational efficiencies.

The technology serves to detect obstacles fallen on the track in real time, improving the safety level of railway operation. It gives an operator the location and size of the obstacles, allowing for the necessary action to be taken, such as stopping the train service if required. It is also used to detect and trace the movement of any non-communicated vehicle on track.

The system is also used to identify track defects, train wheel flatting or defects, leading to improved incident handling of intrusions in the railway track environment.

Smart HR Kiosk "HR Pulse"

Smart HR Kiosk is a smart device designed to provide all services and operations related to human resources for the benefit of Dubai Sports Council staff 24 hours a day, working as a 'virtual employee'.

HR Pulse provides more than 43 services in the categories of General Information, Recruitment Documentation, Forms and Reports, HR Policies and Laws, Certificates and Personal Documents. As an example, the kiosk provides work certificates, salary, experience and no-objection documents in both Arabic and English.

All services and documents are available within (30) seconds. An employee can update personal information whenever necessary, without going to the HR section. An employee can send a relevant document directly to his email through the system. Documents can also be scanned using the kiosk. It can identify an employee by entering the job number or using an Emirates ID card.

E-Inspection Chat Bot

The E-inspection Chat Bot is intended to provide 24/7 support and enhance customer experience by introducing a quick and effective channel that can offer direct one-on-one communication between businesses and DCT establishments, effectively automating day to day tasks.

The innovation combines leading AI and cognitive services from Microsoft. It is applied to various use cases, including the retrieval of establishment's details, viewing its inspection history and outcome reports, current star rating of the establishment, receiving clarifications, self-inspection, proposing inspection plans, viewing and providing documents, incident reporting, communication between DCT and the establishment, and more.

From its deployment, the chat bot has been able to achieve over 95% excellence in customer satisfaction. It has helped to reduce time spent on accessing services and communication by 50%. Also, it allowed to reduce the number of violations, improving the performance in compliance with respective regulations and standards.

Smart Park - Al Mamzar

Dubai Municipality created a park that not only brings new colours, plant varieties and facilities, but also incorporates multiple technological elements to decrease pressure on the natural environment and improve visitors' experience.

As an example, different solutions such as smart benches, smart irrigation and smart oases are used to reduce the environmental impact.

Visitors can use a smart application to take a 3D virtual park tour and get notifications about ongoing events. They can also use VR glasses to learn how to care for plants. To provide a safe environment for children, parents can track the locations of their children using smart bands. Additionally, the park provides unmanned drones for rescuing drowning people.

Data is regularly collected using artificial intelligence to help manage the park effectively.

As a result, Al Mamzar Park has been able to achieve an increase in visitor satisfaction with improved quality of service, bringing 1.5 million visitors in 2019. It has also reduced water consumption and agricultural maintenance cost, while increasing the total agricultural area.

Maqta Gateway

Maqta Gateway came out as a result of an internal innovation process of Abu Dhabi Ports. In 2016, it evolved into a wholly owned subsidiary of Abu Dhabi Ports and became a central pillar of the company's strategy to be a leader in the development of integrated, digital, global trade. It has served as a platform for innovation within the organisation, leveraging the Port Innovation Lab to support the development of innovative solutions and to serve as a space to interact with internal and external stakeholders.

Maqta offers ports, exporters, importers, shipping lines, customs and government agencies a single point of contact and real time information at any time of the day. It is also the developer and operator of the first Port Community System (PCS) in the UAE, which is designed to facilitate trade, streamlined processes and operations within the community.

The system is currently operational in 5 ports, 54 private jetties, integrated with 20 shipping lines, and covers 100+ services from seaside to hinterland. It is the first solution in the Middle East to achieve PCS-to-PCS Integration and is integrated with 3 single windows and 11 ports in China, Belgium and Spain.

STEAM

The DMT's Strategic Transportation Evaluation and Assessment Model (STEAM) is a sophisticated multi-modal travel demand tool that uses AI and Big Data analytics to support the decision-making process in Abu Dhabi. The model uses demographic and economic information in addition to numerous sources of data from surveys, traffic systems and external stakeholders.

STEAM is the official tool for Abu Dhabi Emirate to make informed decisions about land use and development, the transportation system, and transport policy changes. It is able to model travel demand patterns across the transportation system for any combination of scenarios in the forecast horizon years (2020,2025,2030 & 2040).

The model is used by many internal and external stakeholders to study infrastructure requirements and to plan the future of the transportation of the Emirate. This tool has been successfully used to test over 60 Billion AED worth of schemes, policies, and initiatives (e.g. whether and when to expand a road, build a tunnel, implement a toll, or build a metro). Initially started in 2012, but significantly improved over the years, this innovation sustains a satisfaction level above 90%.

The Hive

The Hive Labs is a space that takes into account several factors that subconsciously have a positive influence on the participant's mindset to encourage a more energetic, positive and creative behaviour. These factors include room dimensions and shape, the colour choices, the furniture, the quality of light, food, aroma and planting.

Aside from the physical environment, the Hive prompted the development of the ADNEC Meeting Format Directory with certain styles of unconventional conferencing techniques to reinforce the commitment of the venue to assist clients in having better events.

The key difference between the traditional venues is in the delivery. ADNEC is assuming a consultative approach to enhance the end user (participant) experience, by assigning a dedicated 'Experience Manager' to play the combined role of event planner, concierge and innovation champion.

Since its launch, the Hive has opened a totally new dialogue with clients where the venue is actively contributing to making events meaningful. The Hive has introduced many new clients to ADNEC.

Solar PV

Emirates Water and Electricity Company (EWEC)

1. Description of the innovation

Noor Abu Dhabi is the world's largest single-site solar project. It covers an area of 7.8 square kilometers and features more than 3.2 million solar panels, producing 1177 MW of DC power (936 MW AC equivalent) that can cover the demand of 90,000 people. The project enables increased production of renewable energy and reduces reliance on the use of natural gas for electricity generation, resulting in a carbon footprint reduction of 1 million metric tons per year, which is equivalent to taking 200,000 cars off the road.

The Noor Abu Dhabi project has many innovation aspects, such as the evaluation methodology (EWLEC), which incentivized the bidders to harvest and increase the generation output from their proposed designs. In addition to that, the project is the first of its kind to have 3 winding transformers manufactured by ABB with two 500 MVA connected to a 220kV grid station. It has the East-West 5° panel configuration to harvest the most irradiation and space usage. The station has 4 types of Monocrystalline PV (Photovoltaic, i.e. energy from the sun) modules used: 355W, 360W, 365W & 370W where conversion efficiency is up to 18.57%. 804 Ingeteam Inverters manufactured in Spain are used with 98.5% efficiency, mounted on 201 Inverter Stations.

Moreover, the cleaning process is fully automated, utilising 1412 SolBright robots that were fully assembled on site to clean 6.5 km2 daily. The project has an ecology plan in place to mitigate the impact to endangered species "Dhubs " located on the site in coordination with the Environment Agency of Abu Dhabi.

2. Objectives of the project

Main objectives

1. Energy: Reduce the demand for natural gas, especially at times of peak summer demand when the "marginal" cost of an additional MWh is high due to imported fuel.
2. Economics: Provide energy that is cheaper in summer months than from natural gas and help the sector save significant costs over the life of the project.
3. Emissions: Reduce emissions compared to conventional power generation.
4. Environment: Supports government policies in meeting targets for renewable energy generation.
5. Investment: Promote foreign and local private sector investment in the solar PV industry.
6. Location: Use a strategic location at the heart of the Abu Dhabi's transmission system, underpinning the economics of a large scale solar PV project.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Support the 'Green Power' purpose of creating innovative solutions that increase contribution of clean energy to the overall energy mix by providing 1177 DC MW Power
2. Support the 'Technology for Humanity' purpose by adopting 4 IR technologies (e.g. robots) for construction and operation of the solar power plant

4. Type of value created

- Speed of delivery
- Quality of services
- Employee satisfaction
- Process efficiency

5. Impact meter

- [x] Decreased the cost of living for citizens / residents
- [x] Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- [x] Reduced water / energy consumption
- [x] Increased the number of units of a good/service produced / delivered
- [x] Reduced the cost of goods/services (produced / delivered)

6. Budget

892,000,000 USD

7. Development stage

The project achieved the project commercial operation date (PCOD) on 30th April 2019, where the full plant is in operation and providing energy to the national grid.

Another Solar PV is in plans for construction with capacity of 1,500 MW.

8. Ideation

Working to enhance the sector's contributions towards achieving the Abu Dhabi Economic Vision 2030 and directives of the UAE's leadership, the project was initiated, where the government has set renewable targets that needed to be met.

The project instruction came from the government to launch a station with the capacity of 350MW and the land size of 7.8 square km. The innovation team researched the market to analyse how to utilise the land available and increase the energy output, making it competitive to the market gas prices.

9. Implementation

The process started from an RFP sent to market on 26 April 2016. The innovation bid proposal was launched by the foreign developer, Marubeni-Jinko Solar. The engineering, procurement and construction (EPC) contractor was Sterling & Wilson.

Construction started immediately once the limited notice to proceed was given to the EPC contractor.

The project was completed in one single phase. The construction of the PV plant was finished within 12 months, installing 200 MW in the peak month of July 2018, 26k modules per day from Jinko Solar and 804 inverters from the European manufacturer (Ingeteam).

In comparison to the DEWA 800 MW MBRSolar Park on a land size of 16 km squared, Noor Abu Dhabi was constructed on half the landsize but with close to twice the capacity in a shorter time perdiod.

The plant construction was divided in two stages to achieve full operation. The first stage was on 28 November and the second one was on 27 December 2018. Thus, the project was completed 5 months earlier than planned.

The location of the IPP (Independent Power Producer) was chosen close to the Sweihan Grid Station. This gave a huge advantage to both the IPP as well as Transco Grid, where the Sweihan Grid station interlinks GCC to Al Ain and Abu Dhabi.

The ground secure solutions were used as foundations for the mounting system.

PV modules were deployed with the Mono PERC technology, which helps in optimizing the LCOE (levelised cost of energy) by reducing the CAPEX as well as enhancing the annual energy yield generated from the power plant.

Furthermore, GPS was used by Krinner to install 616,089 ground screws without any human involvement at the speed of 27,000 ground screws per week.

In terms of energy pricing deals, the market leading payment and evaluation methodology incentivized bidders to harvest more power during summer periods by having an evaluation methodology leading to obtaining the world's most competitive tariff at the time of signing. The Power Purchase Agreement was signed within 18 months of project conception with a consortium consisting of Marubeni Corporation of Japan and Jinko Solar of China with the record breaking lowest bid of 2.42 cents per KWh. This was a 60% government and 40% foreign joint venture with an intent to promote local and international investment.

10. Participants

ADPower (60%)

Marubeni Corporation (20%)

Jinko Solar (20%)

Other participants

1 main EPC contractor " Sterling and Wilson" and 18 Subcontractors (e.g. ABB, SolBright, Krinner etc.)

11. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
26 April 2016 – start with an RFP sent to market. Construction started immediately once LNTP was given to the EPC Contractor.	19 May 2017 - Financial Close 30 April 2019 - PCOD

12. Impact and results

1. Reduced carbon footprint by 1 million metric tons per year.

2. Reduced Gas consumption in CCGT plants that are gas fired when energy is exported form PV.

13. Other implications

Major implications

1. Most competitive Weighted Levelised Electricity Cost (WLEC) 8.888 fils/kWh (2.42 c/kWh).
2. Increased incentives during summer months with a weighting factor of 1.6 to the payment mechanism.
3. Fastest procurement process from RFP (25th April 2016) to Financial Close (19th May 2017) (13months).
4. World breaking record in construction of site 18 months.
5. Early power delivered (27th November 2018, which is 6 months ahead of the PCOD on 30 April 2019).
6. First project in the world to have two 500 MVA, 3 winding transformer manufactured by ABB connected to 220kV Grid station.
7. Largest Project in the world to have East-West 5° panel configuration to harvest the most irradiation and usage of 7.8 km2 efficiently.
8. First Project in the world to have 4 types of Monocrystalline PV modules used: 355W, 360W, 365W & 370W with conversion efficiency up to 18.57%.
9. Over 3.2 million PV Panels installed on site where during peak construction month " July 2018" 200MW have been installed in one month (from Jinko Solar), 804 inverters from an European manufacturer.
10. Usage of 804 Ingeteam Inverters manufactured in Spain with 98.5% efficiency mounted in 201 Inverter Stations.
11. First Project in the world to have an ecology plan in place to itigate the impact upon endangered species "Dhubs" in coordination with the EAD, where it has been proven that Solar Projects preserve ecology.
12. First Project in the world to have a PV Modules breaking record installation rate of 26000 PV panels in one day.
13. Usage of a GPS solution to install 616,089 ground screws by Krinner (no human involvement), where 27000 ground screws were installed in 1 week.
14. In comparison with the DEWA 800 MW MBRSolar Park on a land size of 16km2, Noor Abu Dhabi was constructed on half the landsize and with close to twice the capacity in a shorter time span.
15. Typically, 1MW of Solar PV occupies 11000msq (standard is between 10000-12000msq) - in Noor Abu Dhabi, 1MW was installed on 6,120msq.
16. Lowest cost of electricity at 2.4 cents per kWh.

14. Awards

TXF: The Perfect 10 Deals of the Year 2017: Solar Project Financing of the Year 2017 (Winner).

PFI Awards 2017: Middle East and Africa Power Deal of the Year 2017 (Winner).

MESIA 2018: Large Scale Solar Project of the Year 2018 (Winner).

IJ Global Awards 2017: MENA Solar Deal of the Year 2017.

The Oath 2017: Infrastructure and Energy Team of the Year 2017 (Winner).

An Asian-mena Counsel Deal of the Year 2017: Deal listed.

The Middle East Legal Awards 2017: Infrastructure and Energy Projects Team of the Year 2017 (Highly Commended).

International Financial Law Review: Project Finance Deal of the Year 2017 (Shortlisted).

Ajman Integration Framework

Department of Digital Ajman (DDA)

1. Description of the innovation

The innovation represents a unified communication platform for all anchor points which helps local authorities in Ajman government and federal agencies, as well as the private sector, in the process of providing services in an integrated and coherent way. It also helps to exchange data between the systems of participating parties smoothly and easily. This enables customers to get the services within one digital gate.

The solution did not only depend on the technology component but how the whole framework was built to ensure successful achievement of objectives.

Strategic alignment

1. Vision: Society happiness at the core of our digital ecosystem
2. Mission: Together with our society, we build the digital services ecosystem that drives Ajman's competitiveness.

Functionalities & Characteristics set in place:

1. Reduces the liability of scaling integration.
2. Increases partner's ability to adapt to continuous changes in other entities business processes.
3. Created a "big picture" window for the integration map of entities.

The solution was designed with the below capabilities:

1. Security

a. Network

- Internal Network for local entities transactions
- Federal Network for federal and other emirates transactions
- Public Network for private sector

b. Message Transfer: Encapsulate API message with three levels of message security, which are:

- Basic Authorization
- Client/Secret ID
- SSL

2. Capacity/Throughput

a. Can serve up to 100,000 transactions per hour

b. Our API is designed to support large-scale, multichannel digital scenarios to:

- Reduce the cost and complexity of the API service layers
- Decouple APIs from the system of record
- Enable 24/7 operations by consolidating back-end data sources into a scale-out, high-performance digital integration hub (DIH).

2. Objectives of the innovation

Main Objectives

1. Simplify and centralize the interactions between citizens and government entities under a secure and reliable digital solution reducing complexity and creating alignment.
2. Enhance customer experience and placing their happiness at the core of our digital services design.
3. Build the best ICT capabilities for Ajman Government.
4. Improve digital services adoption.

Department of Digital Ajman is the leading entity driving the digital transformation journey of the Emirate of Ajman in 437 government services delivered across 18 government entities, both local and federal, working with the aim of achieving five main strategic objectives which are as follows:

1. Digital Transformation of 100% of Ajman's government services.
2. Digital Transformation of 30 Ajman government services every 100 business days.
3. Digital Transformation for all Ajman shared government services.

4. 80% Adoption of digital services.
5. Increasing the efficiency of government expenditure by 20%.

Being the smallest emirate among the seven emirates of the United Arab Emirates puts Ajman in a challenging position where around 40% of Ajman's government services are considered integrated services (i.e. more than one entity participates in service delivery). This led to many challenges, such as:

1. Multiple hectic touchpoints between the customer and different government entities.
2. No control over how the service is delivered especially when it is outside their entity's boundary.
3. Complexity and different priority settings among entities.
4. Silos between business service delivery units and technology within the same entity.
5. Technical challenges between new and disparate systems.

Department of Digital Ajman wanted to innovate a solution that will achieve the following direct and indirect objectives:

Direct Objectives

1. Remove direct integrations (point to point) among entities.
2. Centralize shared data between entities.
3. Retrieve data from its trusted source (data owner).
4. Provide a secure transformation medium for data exchange among entities.
5. Support entities in integrating with legacy systems.
6. Enhance integration between partners by applying best practices approaches to expose and consume APIs.
7. Provide dashboards to monitor services status, transactions, etc.

Indirect Objectives

1. Achieve governance data sharing among local entities.
2. Re-engineer current complex services by reducing the number of visits and interdependencies.
3. Reduce the number of attachments with the aim of going paperless.
4. Achieve local and UAE digital transformation strategies' goals.
5. Develop an API library for services innovation.
6. Support the digital economy of the Emirate of Ajman.
7. Create a pool of government data to create unprecedented services.
8. Foster the culture of service innovation.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Contributing to the UAE ambition of having Global Impact enabling "Agile Government".
2. Aligned with the purpose of developing smart ecosystems with access to multiple services at any time and place under the Technology for Humanity component.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Communication within organisation
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Decreased the cost of living for citizens / residents
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Reduced water / energy consumption
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

1,500,000 AED

7. Development stage

The innovation is currently in the scaleup and support phase.

1. Support current Integration points.
2. Follow the pre-defined process for hosting new integration points or consuming existing integration point.
3. Update the integration maps of entities continuously.
4. Work with entities on re-engineering their complex services.
5. Co-creation and co-design of new/existing customer journey maps (e.g. Beet Amer Project).
6. Creating new service innovations by designing new service bundles.

8. Ideation

Source of Idea

The idea of creating a solution to expedite digital transformation of the emirate of Ajman was first introduced in Department of Digital Ajman strategy by the end of 2015. Later in early 2017, the need was re-highlighted again in the Ajman Digital Transformation Plan.

Department of Digital Ajman realized that if Ajman Government entities continue working in silos among each other, it will not be able to enable the ambitious and challenging strategic objectives of the Emirate's plan.

From this point, the entity started the process of picturing solutions to this challenge and identifying a framework that needs to be in place to achieve the set objectives.

Process of Ideation, tools used and the people who were involved in the ideation process

1. Conducted Interviews with key stakeholders.
2. Conducted local and international benchmarking to explore different solutions and best fit practices.
3. Facilitated brainstorming sessions/how-might-we technique (HMW).
4. Attended digital transformation conferences such as Gartner ITxpo symposium, and conducted many 1-to-1 sessions with Gartner Analysts.
5. Met with many technology providers to see available solutions in the market and assess capabilities.
6. Conducted design thinking sessions with local entities representatives to understand their current challenges and their short, mid-, long term objectives.

Results achieved during the ideation stage

1. A study was created to assess different solutions.
2. An RFP was officially released with Technology Requirements.
3. The Digital Transformation Plan executive committee got announced across Ajman with representatives from all government entities.

9. Acceleration

The project got approved for acceleration based on the study and benchmarking conducted, in addition to be a main enabler to achieve the strategic objectives of the Digital Transformation Plan of the Emirate.

Later, the project was officially announced and got added to the portfolio of projects overseen by the Strategy and the PM office of Department of Digital Ajman.

Main activities carried for acceleration

1. Set the team and build capabilities.
2. Conduct Design Thinking workshops with the Executive Committee.
3. Conduct intensive meetings with the technology provider to agree on the best sizing and infrastructure requirements to start with.
4. Meet regularly with the infrastructure team and set the implementation plan while assessing risks.
5. Set the integration map plans and get approvals from related departments.

Tools used and people involved

1. Facilitating brainstorming sessions and focus groups.
2. How-Might-We (HMW) technique.
3. Design thinking sessions.
4. Attending several conferences that address challenges faced by governments during their transformation journey.
5. Meeting frequently with the executive committee teams to assess opportunities and challenges.
6. Training the Executive Committee to enable them to communicate the change in their entities.

Results achieved on this phase

The project plan was set, the project progress was smooth and aligned with the plan. Department of Digital Ajman got engaged with the Department of Economic Development as the first partner to start with.

10. Implementation

Integration maps were defined to collect the most reusable services across the Emirate, through the analysis of the data available on the service catalogue system of the Emirate. Then, the DDA team started approaching entities who could be the potential consumers for these services to enrich local entities capabilities towards providing optimized and innovated services.

Step 1: Identify External Consultant and Vendor

1. Develop RFP and identify long list of consultants and vendors capable of implementing an integration architecture model.
2. Shortlist vendors, issue RFP, select vendor and sign contract for the Phase 1 only.

Step 2: Develop the Integration Framework Roadmap

1. Gather functional and technical requirements from DDA and the local entities.
2. Identify a business process to cater for entities' integration requests for providers/consumers.
3. Determine the integration platform operating model including:
   a. Individuals which include all participating parties that provide services.
   b. Processes for integration, interoperability, as well as business and IT processes required to support the target capability.
   c. Target architecture.
   d. Governance including links to the interoperability framework, integration management and governance.
4. Define the scope of work for integration platform development.

Step 3: Design and Implement Integration Framework Architecture Model

1. Design an interoperability framework and a service-oriented modeling and analysis framework.
2. Design and establish standards and policies for information exchange and individual interactions and integration points (functional and technical specifications).
3. Design and establish policies for processes interoperability across Ajman Government entities (AGEs) and missions for organizational alignment and interoperability for departments.
4. Establish a governance model for the framework standards adoption and usage.
5. Prioritize and determine reusable services and develop phased master plan for deployment.
6. Register any available application services on the Integration Framework.
7. Design, deploy and test any cross-application services on the integration framework.
8. Rollout solution to Ajman Government entities (AGEs).

Step 4: Socialize the Architecture Model

1. Socialize and promote the solution by organizing technical workshops and awareness sessions
2. Organize and provide the needed training sessions.

Tools used and people involved:

1. IBM API Connect and IIB (technology used).
2. Microsoft Teams (Communication Tool).
3. Microsoft projects (Manage Project Plan).
4. Digital Transformation team from each local entity.
5. Ajman Living lab (Meetings, workshops and brainstorming sessions).

Challenges faced:

1. Mindset of some entities towards data sharing is not always positive.
2. Changing the current status quo of service delivery is not easy.
3. Business process re-engineering is not a favoured process.
4. The fear of change.

How did we overcome those challenges?

First of all, a committee was set to identify key stakeholders of every local/federal entity of the Emirate and understand their current challenges and their mid- and long-term business objectives. For each local government entity, an integration map was created that shows the number of integrations required with other entities. The DDA also, through intensive meeting with our stakeholders, tried to understand the challenges faced for this type of integration (if any). Additionally, DDA team announced the availability to this consultation as a service in its Service Catalogue for their local government entities to encourage them to engage and make use of ADG's expertise to ensure the right mode of integration was chosen for their services. Moreover, DDA team, developed an award that recognize the entities with best efforts towards achieving the digital Transformation Plan of the Emirate. A decent percentage of the awarding criteria went to entities with best practices in services integration.

11. Participants

- Ajman Local/Federal Government entities
- Telecommunications & Regulatory Authority
- IBM company
- Department of Digital Ajman Applications & Infrastructure team

12. Start and end date

Start date (from the ideationphase)	End date (to the implementation phase)
Starting on May 2017	phase 1 launched on March 2018 Phase 2 launched on Sept 2018 Phase 3 launched on March 2019

13. Impact and results

Current Statistics (5 March 2020)

1. Number of transactions:
   - 32,000 transactions in 2018
   - 500,000 transactions in 2019
   - 127,967 transaction last three months (Dec 2019 - Feb 2020)
2. 140 Integration points
3. 29 subscribers on-boarded from local, federal entities and private sector.
4. Enabler for 12 projects and initiatives

Tangible results

1. Reduced the number of papers used by 428,449, leading to cost savings of AED 1,713,796 in 2019.
2. Reduced the cost of integration with each partner (including resource costs and efforts needed to govern these integration points).

Intangible results

1. Increased the percentage of Digital Transformation from 61% to 91%.
2. Enhanced digital adoption percentage.
3. Became a critical enabler to the local and federal projects and initiatives.

Future Plans

1. To designing new innovated government service bundles that focus on citizens needs.
2. To engage citizens in the development of ideas through open data sources:

   ADG started creating a pool of open data, being able to establish 500+ data sets in different formats to encourage the community to think of applications that could be of help to the government. As an example, Department of Economic Development shared their data sets with students who developed services for them which were later taken as a case study.
3. Monetize the data captured and generated through this innovation.

   ADG started moving to a more proactive approach, generating API library revenue. The entity sees a huge potential in monetizing the library data.

Other Results

1. The most required information across all government services, were identified and DDA team started to record and track those services to ensure their availability, e.g. data available on the emirates ID, licenses Info, residential/commercial contracts details.
2. ADG become an integration consultant and reference point for Ajman local entities.
3. ADG built the Ajman Government Integration Map.
4. Data is always retrieved from its trusted source (Data Owner).
5. Provided local entities with the needed capabilities to deliver effective and innovative customer services/bundles
6. Encouraged people to apply for online services.
7. Achieved goals related to local and UAE digital transformation strategies.
8. Supported digital economy.
9. Created a pool of government data to create unprecedented services (such as Beet Amer Project).
10. Increased customer satisfaction.

دائرة النيابة العامة
Public Prosecution Department

Self-service kiosk

Public Prosecution Department, Ras al-Khaimah

1. Description of the innovation

The Public Prosecution Department's (PPD) customers are the parties to the law cases and their categories, including defendants, agents, lawyers, witnesses, victims, and informants. All of them may need services such as copies of cases, letters, reports, copies of rulings, permits to receive cars and passports, as well as permits stating the cancellation of travel ban orders.

The Ras al-Khaimah (RAK) Public Prosecution Department invented a device to provide all customers with an access to the services they want within a few minutes from anywhere in the emirate. The solution is an advanced kiosk formed by a printer, a scanner, an ID placeholder, a fingerprint reader, a camera and a full HD screen. Customers can use their UAE Pass and personal credentials to access the kiosk. The services are available in Arabic and English.

For example, if a victim wants to obtain an official copy of their case, all they need to do is stand in front of the self-service kiosk and choose the language, then enter the Emirates ID card and put their fingerprint to identify and verify the identity. Then, the system asks to choose the type of service, enter the case number and type, after which the user to write any notes via the interactive screen or scan any document to attach to their application. The service fee has to be paid by card or cash. Then, the customer receives a message and an e-mail that includes a reference number for the service and a confirmation that a relevant employee is dealing with the request. After a few minutes, the customer receives a message and an e-mail that includes the fee for copying the case file according to the number of papers. The fee can be paid via the kiosk. Within 15 minutes, the customer can find the copy of the case file on the" My Transactions section" of their account and is able to print it using the in-built printer.

The Public Prosecution opened a new self-service centre, where the kiosk was placed and which operates daily starting from 7.30 am to 9.00 pm. Overall, at the moment there are 4 kiosks operating: in a support centre, in the traffic prosecution centre, in the central jail and in the residence prosecution.

2. Objectives of the project

Main objectives

1. Enabling attorneys to obtain official documents such as copies of cases, 'to whom it may concern' letters and decisions to hand over seizures instantaneously during the hearings. This is needed to avoid wasting time in the event when the court has to postpone a trial in order to allow an attorney to collect and present the missing documents.
2. Providing a communication channel with the Customer Center to obtain their service in the absence of a smartphone or internet connection (which are necessary to access the needed services on the Ras Al Khaimah government portal or the Public Prosecution website).
3. Enabling detainees in the custody of criminal provisions to obtain services inside the central prison without the need to be transferred to the Public Prosecution Department.
4. Enabling those who do not have a valid ID to log in to the RAK Public Prosecution CRM in order to apply for any service. The current systems all over the UAE depend on UAE Pass or Smart Pass; however, the kiosk allows customers to use usernames and passwords in case of missing ID.

Other objectives

1. Increasing the number of channels for providing services to customers.
2. Encouraging the culture of innovation in the Public Prosecution Department.
3. Training customers in using electronic services instead of traditional methods, assisting customers in electronic transformation.
4. Facilitating the obtaining of the department's services in remote places in the emirate.
5. Reduce operating expenses, such as those related to publications and appointments, and optimize work time between other activities.
6. Increase customer and partner satisfaction for the department's services.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supported the 'Technology for Humanity' purpose by increasing access to department's services by means of technology.

4. Type of value created

- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

40,444 AED per kiosk

7. Development stage

The project is in the scaleup stage. RAK is currently working on developing 20 new services to be added to the electronic kiosk system.

8. Ideation

Innovation started with an idea proposed by two of the department's employees who specialize in providing services to customers. The idea was presented to the public prosecutor and after, was directed the department's Smart Development Committee to study it further.

9. Acceleration

The committee held two brainstorming sessions. The first one was with a group of lawyers who liked the idea and supported its implementation. The second brainstorming session included the heads of departments and managers of the concerned departments to collect more information on the best use cases and to discuss the implementation of the idea.

Then, the main ideas were analysed in the innovation lab. During the sessions, experts from the e-government authority in Ras Al Khaimah participated, sharing their opinions and ideas.

After, the Public Prosecution asked the e-government authority to nominate three companies and request them to submit their technical and commercial offers. The best technical offer was chosen for the company that has the ability to implement and enjoys a good reputation in the state.

The cost was primarily related to the cost of the service as the Public Prosecution is a non-profit organization and in order to adhere to the local fees law, which specified the application fees exclusively.

10. Implementation

The smart development committee held several meetings with the experts of the e-government and the designer company to work on the design and choose the features to be included in the kiosk.

Then, the project contract draft was prepared and presented to the public prosecutor for approval and a meeting was held with the budget committee to provide the project's cost. The finance department was notified of the project and its cost for approval. The company signed the contract and the PPD issued the invoice for the first instalment of the cost.

The partnering company provided the following devices: ID reader, fingerprint reader, scanner, paper printer, cash collector, card collection device and interactive screen. The efficiency of these devices was tested, and the kiosk was then manufactured by an outside specialist.

Then, the stage of designing the electronic system started with help of the systems analyst at the e-government and the partnering company. The PPD team were responsible for most of work related to the development of the tables, services and coding. After supplying the first version of the kiosk, the electronic system was deployed and tested, proving the efficiency of the system and the kiosk.

Then the kiosk was put in the customer service centre. The total number of transactions completed through the device reached 3452 (the total number in 2019 was 1552).

The Public Prosecution submitted an application to the Ministry of Economy to register the intellectual property rights of the kiosk (due to the fact that the kiosk is the first of its kind at the state level), and the Public Prosecution obtained the intellectual property certificate for the electronic system.

After the kiosk succeeded in implementing the goal of its innovation, the central prison requested that a copy of the kiosk is placed inside the prison so that the prisoners could also benefit from it.

The Public Prosecution constantly collects customer feedback, leading to a decision to provide more services on the device. Therefore, RAK is currently working on developing 20 new services to be added to the electronic kiosk system.

11. Participants

From the Public Prosecution Department

- Counselor / Hussan Muhaimid, General Prosecutor of RAK
- Counselor / Ahmed Elrakib, Head of the Smart Development Committee
- Habiba Habib, Director of Cases Service
- Amna Mubarak, Director of the Criminal Cases Department
- Sumaya Al Mutawwa, Director of Support Services Department
- Mohammed Al-Shehhi, Member & Secretary of the Smart Development Committee

From the e-government authority

- Ahmed Hussein, SAP system consultant
- Ghassan Jarada, Project Manager

Other participants

The Public Prosecution contracted a company with guaranteed business track record in the UAE to design the kiosk.

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
July 2017	December 2018

13. Impact and results

Main impact

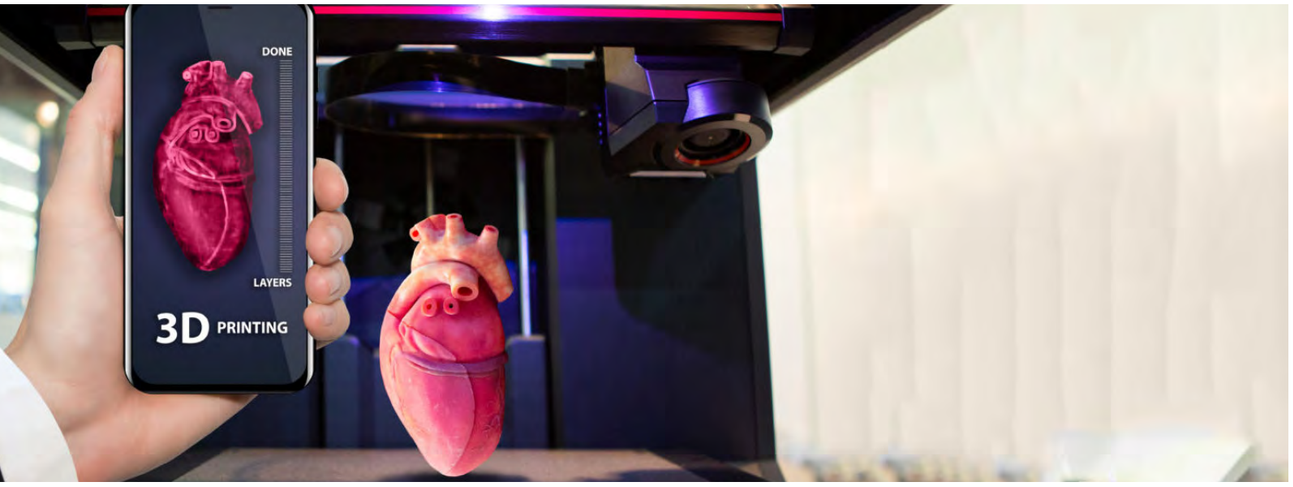
1. The attendance rate of the clients in person to the Public Prosecution department decreased to 20% only, which attributes to disabled and elderlies primarily.
2. The percentage of transferring prisoners from the central prison to the Public Prosecution Department to obtain their services decreased to 0%.
3. The customer satisfaction for the electronic services provided by the Public Prosecution increased from 79% to 93%.
4. The satisfaction rate of workers in the Public Prosecution Department increased from 80% to 94%.

14. Other implications

1. The Public Prosecution submitted an application to the Ministry of Economy to register the intellectual property rights of the kiosk (due to the fact that the kiosk is the first of its kind at the state level), and the Public Prosecution obtained the intellectual property certificate for the electronic system
2. The Public Prosecution won the first place award in the Smart Government category of the Sheikh Saqr Program for Organizational Excellence

3D Printing
for congenital heart anomalies

Health Services - SEHA



1. Description of the innovation

About 1% of babies born in the UAE suffer from a congenital heart disease. Two-thirds of them need cardiac surgery for survival. Complex operations require proper preoperative planning to ensure patient safety and expected outcomes standardized in international benchmarks. Planning mandates creation of individualized 3D models in which diagnosis is confirmed and steps of the operation can be emulated in advance of the actual surgery. This could save precious operative time, save costs, reduce complications and improve patient safety, as well as outcomes. In certain cases, 3D models can reveal surgical possibilities not anticipated before and can render inoperable patients suitable for surgery, so they directly save lives.

Three-dimensional (3D) printing for congenital heart anomalies is a joint application of cutting-edge medical imaging technologies and emerging techniques of 3D design and printing in a clinical setting. The project also provides examples and guidance that can be applicable in other fields of clinical medicine, helping transform the way surgery will be performed in the future.

3D modelling and printing greatly supports advances in individualized medicine and surgery. In congenital cardiac surgery, 3D models and printed prototypes offer advantages of better understanding complex anatomy, hands-on preoperative surgical planning and emulation, improving communication within a multidisciplinary team and patients. The solution often adds important new anatomical findings and prompt alternative operative scenarios.

In creating 3D printed models, the innovative project applies the following steps:

Use advanced image segmentation tools to transform graphical data obtained from medical imaging systems such as computed tomography (CT) into 3D computer models.

Leverage the multi-modal integration of MRI and CT scans to fine-tune the model generation.

Use advanced manufacturing techniques, such as the polyjet 3D printing technique, to transform 3D computer models into physical artifacts using a wide range of soft and hard materials which together capture properties of soft tissues.

2. Objectives of the innovation

Main objective

1. Use modern personalized medicine to ensure patient safety and achieve the best possible clinical outcomes for the most complex subset of patients

Other objectives

1. Improve patient safety during complex pediatric cardiac operations
2. Decrease operation rooms utilization time, decrease complication rate
3. Implement cutting-edge best practices in the UAE healthcare
4. Provide a role model for innovation for other disciplines to follow

Indirect objectives

1. Establish 3D printing laboratory and its professional team with SKMC-NYUAD cooperation that can assist the 3D modelling and printing needs of other medical disciplines (orthopedics, maxillofacial/ reconstructive surgery, neurosurgery, oncology, etc.)

2. Accumulate a collection of 3D printed cardiac models with complex cardiac anomalies that can be used as an archive and reference for
   a. undergraduate and postgraduate medical education
   b. joint international research projects and future research studies

3. Spread professional and public awareness on cutting-edge medical technologies by organizing
   a. hands-on surgical training (HOST) for residents, trainees. Online trainings: interactive webinars. Contribution to international meetings/webinars
   b. raising public awareness of treatment possibilities of congenital with online webinars, videos, interactive sessions
   c. scientific and community publications in the topic

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Supports the 'Wellbeing' purpose by providing treatment and health services based on advanced technology and contributing to medical research
2. Aligned to the human-centric purposes through the 'Technology for Humanity' component by supporting the 4 Industrial Revolution technologies application

4. Type of value created

- ✓ New service/ product
- ✓ Quality of services
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Increased the number of units of a good/service produced / delivered

6. Budget

2,000-3,000 AED - on-site production

15,252 AED - outsourced production

7. Development stage

The 3D printing in healthcare is implemented in partnership with the NYU. The next step is getting the approval for scale up through a workstation at the SKMC.

8. Ideation

The training activities of the pediatric cardiac surgeons traditionally involve the usage of cadaveric cardiac specimens from deceased patients. Nowadays the supply of those specimens has been reduced thanks to the evolution of the medicine resulting in less deaths and longer life-expectancy.

Seeking to solve the need for more specimens, the 3D technology has been implemented for their recreation. These 3D models are patient-specific, resulting in individualized medicine, recording complex anatomies into an archive for training and education purposes.

Starting with an international benchmark analysis, the project idea was developed based on the best practices identified in Europe, seeking to adjust them for the cardiac specialty relevant for the UAE context.

When the project was initiated, a full study proposal was developed and approved by the Department Chair, CMO and the CEO Office. Then, the Institutional Research and Ethics Board (IRB) was approached for initial

consideration; they decided that no formal IRB assessment and/or approval was needed as 3D models were not medical devices but rather anatomical models that would not come into physical contact with the patient. In communication of imaging data of any patient, the hospital strictly adhered to pertinent data protection rules. For each case, a written statement was also received on their full adherence with patient anonymity from third-party/external participants. 3D printed models are kept in the Department Office in a locked cabinet.

9. Acceleration

For the acceleration phase, partners were identified among those who could help with the segmentation and high-quality printing abilities. Initially, it was a challenge to identify local expertise, but now with the SKMC-NYUAD collaboration, these tasks are performed locally in the UAE.

As project's key stakeholders, the SKMC team (Dr L Kiraly) started cooperating with a world-leading international company in the field (Materialise, Leuven, Belgium). Selected patients for the first testing of the idea underwent CT-angiography as part of their routine preoperative workup. The collected information was processed to generate the segmentation required to create 3D-virtual models of the heart-great vessels. The complex models were developed in collaboration with the NYU to speed up the process. Followed by a high-quality printing process, the models were created in real size using different materials. The printing process took place at the NYUAD Core Technology Platforms labs. 3D models underwent post-procession refinement. Accuracy of the models was evaluated intraoperatively. All models were used in preoperative planning, team-communication and as a reference for intraoperative anatomy and comparisons. All patients were operated on uneventfully and survived.

At the end, a post-hoc comparison study for segmentation and 3D printing with the NYUAD investigators was conducted validating the quality of the 3D models, confirming that locally printed 3D printed hearts had higher quality than the ones done abroad. This verified NYUAD's ability to perform the task in less time and at a fraction of the cost.

10. Implementation

By having the initial and continuous approval and support from Departmental Chair, CMO and CEO Office of SKMC and the same from SEHA, implementation of the project did not require further approvals. In the meantime, cooperation is sought with scientists at the Core Technology Platforms Operations, NYU Abu Dhabi, Saadiyat Campus. For the academic and clinical partnership, there was approval and full support of respective Leadership.

Scientists at NYUAD in collaboration with clinicians at SKMC developed this practice in the UAE to make it completely reliant on local resources. Facilities from NYUAD contain state-of-the-art equipment that is ideal for successfully performing the proposed research assignments in this project. In terms of tools, there are imagining software and expertise, 3D printing machines of advanced quality and supporting multiple materials, high-performance computing, and machine learning.

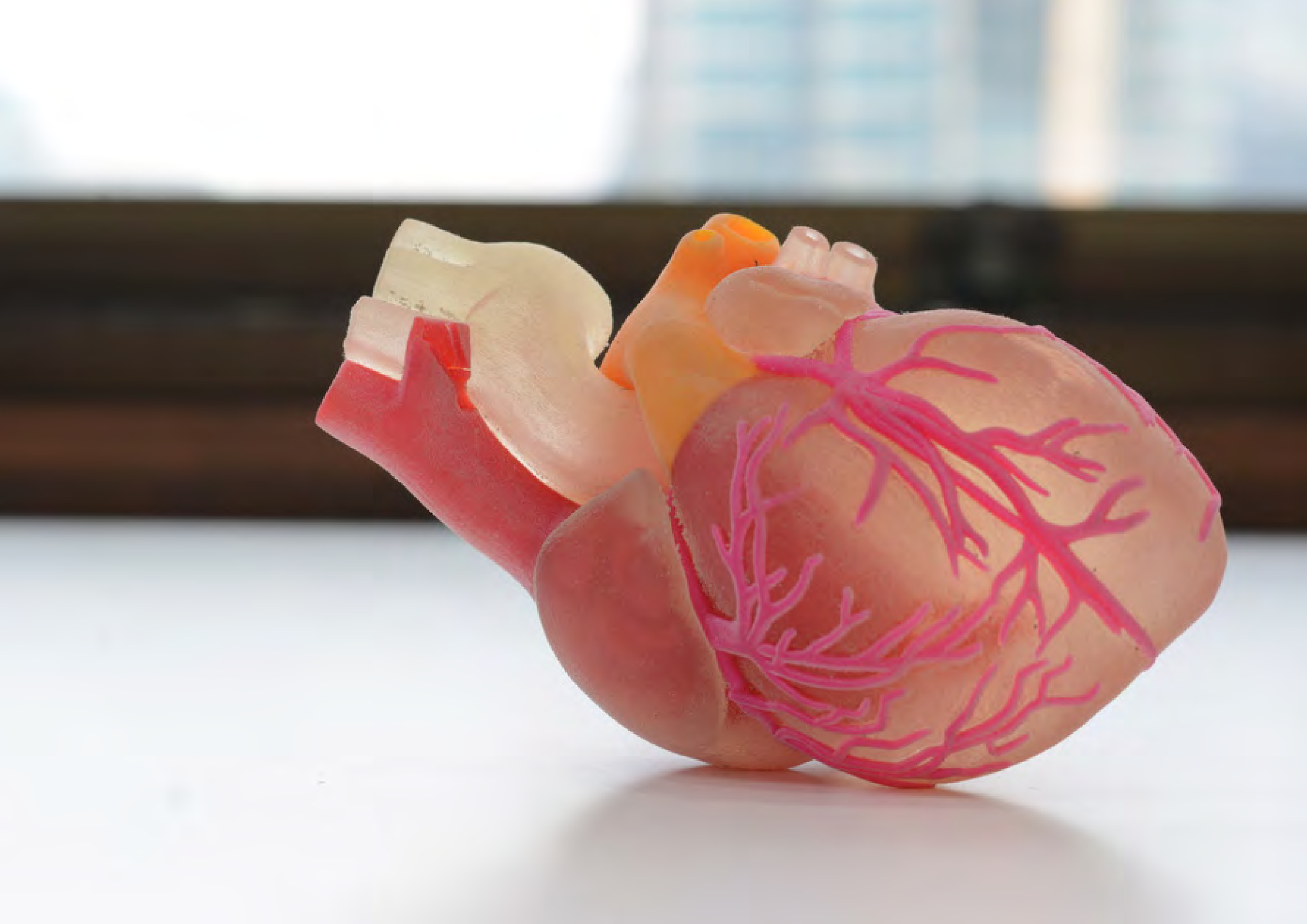
Main achievements

1. Financial: Coverage for the 3D modelling and printing has been difficult as these activities and items, respectively, are new modalities having no insurance reimbursement. Our institution received financial sponsorship from the Hamdan Foundation Award to cover half of the case-scenarios. SKMC paid for some of the remaining cases with a special code created by SEHA. In one instance, the patient's family covered the incurred costs. With the cooperation between SKMC and NYUAD, the complete cycle from CT and MRI image acquisition to the CAD model creation and 3D printing can happen in Abu Dhabi without outsourcing any of the data to third parties. The project requires funding to accelerate the innovation and, for its full implementation, to build a morphological database, exploit educational and training possibilities.

Next steps (currently in preparation)

1. SKMC needs to set up a workstation and its personnel for initial data processing. Having a 3D dedicated workshop at SKMC will also enable it to be used by other disciplines, e.g. maxillofacial surgery, orthopedics, neurosurgery, oncology, that will significantly expand the scope of the project.
2. Research proposal for an international survey on the usage and advantages of 3D modelling and printing. The proposal is to be submitted to international professional societies (ECHSA Congenital Database, World Society for Pediatric and Congenital Heart Surgery).
3. Increase public awareness about treatment modalities of congenital heart disease in the United Arab Emirates. 3D modelling and printing is a unique service that is only offered in a few centers abroad.
4. Spread the knowledge about this modality that may be useful in modelling other organs and utilized by other specialties.

Additionally, there is a plan of the project team to gain high representation in organizing, chairing, and presenting at 3D printing scientific conferences, e.g. at the annual ArabHealth Summit. These accredited conferences have attracted hundreds of participants from all over the globe and optimally positioned the UAE healthcare among international scholars.



11. Participants

Sheikh Khalifa Medical City, Institute of Cardiac Sciences

Dr. Laszlo Kiraly M.D., Ph.D., FETCS (Head, Consultant, Pediatric Cardiac Surgery)

Dr. Nishant C Shah M.D. (Consultant, Pediatric Cardiology)

NYU Abu Dhabi

Reza Rowshan, Ph.D. (Executive Director, Core Technology Platforms Operations)

Osama Abdullah, Ph.D. (MRI Physicist, Core Technology Platforms)

Oraib Al Ketan, Ph.D. (Research Instrumentation Scientist 1 - Advanced Manufacturing)

In the previous phase of the project, SKMC collaborated with Ms Magali Minet, Bioengineer (Materialise Inc., Leuven, Belgium) and Mr Carlos Perez, Bioengineer (Materialise Inc., Lima, Peru)

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
Autumn 2015 (ideation)	2016: first 3D cardiac models First surgery with a 3D model was in 2016 2019 - partnership with NYUAD 2020 - goal to get approval for on-site work-station and manpower at SKMC (at least by the end of the year)

13. Impact and results

Main impact and achievements

1. Produced 3D prototypes of the heart-great vessels for 13 cases (7 males, median age: 11 months) undergoing complex intracardiac repairs, achieving excellent accuracy. Models refined diagnostics in 9/13 cases and provided new anatomic information in 7/13; in 11/13 they contributed to an improved operative plan; an alternative operative plan emerged in 7/13. No morbidity / mortality occurred. Acceptance-index of the 3D models was maximal among the multidisciplinary clinical team and patients and their relatives.
2. Enhanced understanding of the pathomorphology of complex congenital cardiac disease.
3. Improved communication within the clinical team.
4. Improved comprehension and understanding for patients' families and relatives.
5. Improved confidence in the clinical process and results in realistic expectation of outcomes.
6. Increased patient-safety, and reduction of complications.
7. Patients previously deemed inoperable can now be offered surgical solutions drawn from 3D models; it is a directly life-saving outcome of the project
8. UAE Healthcare positioned among international scholars through international conferences participation.

14. Other implications

Awards

Dr L Kiraly received:

a. 'Honoring eminent citizens from 100 countries living in the UAE for their contribution to the society' - as part of Year of Zayed 2018. Award by Ahalia Medical Group in association with the Abu Dhabi Community Police in May 2018 (no financial reward included).

b. 'Markusovszky Award' presented by the Editorial Board of Medical Weekly for being the author of the most substantial clinical in 2019 -2020.

Meetings organized/chaired

by Dr L Kiraly related to the topic of 3D modelling and printing (no financial remuneration):

a. 3D-printing in healthcare. Part of ArabHealth 2018 and 2017 conference series

b. Seminar on three-dimensional printing for surgical planning: in partnership with Khalifa University, Abu Dhabi in 2017

Presentations

by Dr L Kiraly related to the topic of 3D modelling and printing (no financial remuneration):

a. Pediatric Multispecialty Conference: "Awareness of Integrated Pathways Matter", Abu Dhabi, UAE, 2019.
b. EMN Meeting on 3D Printing, in St. Julian's, Malta, 2019. Invited speaker.
c. 1st Joint Meeting of the European Congenital Heart Surgeons Association (ECHSA) and the World Society for Pediatric and Congenital Heart Surgery in Bulgaria, 2019. Invited speaker.

Publications

in peer-reviewed international journals authored by our team published in the topic of the project (attached to the application):

1. Three-dimensional virtual and printed models improve preoperative planning and promote patient-safety in complex congenital and pediatric cardiac surgery. Kiraly L. (2019)
2. Virtual museum of congenital heart defects: digitization and establishment of a database for cardiac specimens. Kiraly L, Kiraly B, Szigeti K, Tamas CZ, Daranyi S. (2018)
3. Utilization of 3D-printing and 3D-modelling techniques in Paediatric Cardiac Surgery. Arab Health Magazine. Kiraly L. (2018)
4. Three-dimensional modelling and three-dimensional printing in pediatric and congenital cardiac surgery. Kiraly L. (2018)
5. 3D-modelling and printing of the heart and great vessels in medical education and clinical practice – a historical review. Kiraly L. (2016)
6. Three-dimensional printed prototypes refine the anatomy of post-modified Norwood-1 complex aortic arch obstruction and allow presurgical simulation of the repair. Kiraly L, Tofeig M, Jha NK, Talo H. (2016)
7. Three-Dimensional Virtual and Printed Models Improve Preoperative Planning and Promote Patient-Safety In Complex Congenital and Pediatric Cardiac Surgery. World Congress of Cardiology & Cardiovascular Health Kiraly L. (2018)

شـرطـة أبـوظـبـي
ABU DHABI POLICE

FEDLIMS

Abu Dhabi Police

1. Description of the innovation

FEDLIMS (Forensic Evidence Department Laboratory Information Management System) is as a customised electronic laboratory information management system for technical and management operations related to forensic processes. It is used to manage digitally 207 types of tests within one automated laboratory system, which eliminates manual steps and increases the process efficiency. The system is done according to 17025 ISO standards for laboratories. It can be used to collect requests from all police stations across the UAE. Now, FEDLIMS is providing a full range of services to Abu Dhabi and limited services to other emirates (e.g. services related to crime scenes gun licensing). It is an end-to-end platform to integrate all processes and services of the forensic department directly related to customers.

The program includes a number of subsystems, the most important of which are the quality system, storage management system and the system for monitoring the competence of workers, in addition to all administrative and technical processes for forensic evidence checks. The system proved its efficiency in dealing with the outputs of 9 devices automatically without the need for human intervention. It enhances the accuracy of the results and saves the effort and time needed to process and generate reports.

FEDLIMS is considered one of the most comprehensive projects at the administration level since the Forensic Evidence Department establishment. It is used by all sections of the administration for receiving requests from clients, receiving and delivering reports and samples, conducting technical examinations and issuing reports in addition to all the procedures accompanying and supporting these operations, such as recording and tracking customer requests.

The project is the first of its kind in the police field.

The main characteristics can be outlined as follows:

1. The system is owned by the General Command of Abu Dhabi Police
2. Cases and their details are registered electronically
3. All geographical locations of the laboratories in Abu Dhabi, including Al Ain and Al Dhafrah, are linked with all Abu Dhabi police stations and with some police centres in Sharjah, Ajman, Ras Al Khaimah and Fujairah, through the internal secured network.
4. Working procedures are specified according to international standards
5. The system is linked with many other criminal and administrative systems
6. There system is fully integrated with many technical devices
7. Visual and the technical reports are created
8. An option for electronic signature for approval, receipt and delivery is available
9. Monitoring devices calibration and maintenance records
10. The storage system is in place
11. Barcode strips are used
12. Arabic and English languages are supported
13. A quality management system and a productivity dashboard are included, as well as a unit for strategic planning and ensuring staff efficiency.
14. CLIMS Client Laboratory Information Management System) is enhanced with customer screens
15. Notifications are sent via SMS and internal messaging systems for following up and speeding up the processes
16. The emergency plan can be activated from the system
17. Polls, reminders and alerts can be done electronically
18. The system is flexible towards the work needs

2. Objectives of the project

Main objectives

1. Allow for better case management, including better KPIs, comprehensive reporting tools and improved time saving
2. Support the UAE Paperless Government initiatives
3. Enable software integration with other systems, such as i2, Actuate, strategic Dash board, FIHS, with further customisation with other software and equipment
4. Enable improved equipment integration, including BIORAD VARIANT, BECKMEN COULTER & CELLDYNE, UDELLIPSE,GCMS, ICPMS, BC, GC, IC,ICP, ATM,TOGA,TOC, Architect – 2000, (Abbot), Genetic Analyzer for DNA
5. Make the system accessible through mobile tablets with 4G network
6. Make the system user friendly, minimising unnecessary interactions
7. Ensure secure reporting
8. Allow for easier communication with SMS alerts and internal messaging systems
9. Reduce costs.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supported the 'Technology for Humanity' purpose by developing smart ecosystems, connecting laboratories for forensic testing with the police and other relevant stakeholders.

4. Type of value created

- Speed of delivery
- Quality of services
- Access to services
- Employee satisfaction
- Communication within the organisation
- Process efficiency

5. Impact meter

- Increased the quality of life of citizens / residents
- Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- Increased the number of units of a good/service produced / delivered
- Reduced the cost of goods/services (produced / delivered)

6. Budget

In-house

7. Development stage

GAP analysis had been done for the whole section from different lab locations. The system has been in use since 2012 and continually improved. New version of the system is under development and will be released soon in 2020.

8. Ideation

Ideation process

1. In 2011, in line with an ongoing trend, there was a need in the country to transfer most of the services delivered by the institutions and governmental sectors into an electronic format. Similarly, the federal government was actively promoting digitalization.
2. Therefore, a brainstorming session was conducted, with help of ISHIKAWA and SWOT analysis, to come up with the best idea that can be implemented in order to automate the whole processes within FED in relation to their customers.

3. The Abu Dhabi Police did the GAP analysis of processes at all levels: crime scene, Police station, crime scene support, FED Archive Receiving, FED Archive Distribution, FED Sample Analysis, FED Final Report generation, report delivery and exhibits delivery to the customer. The people involved in the ideation process were the FED higher managements, Stakeholders representatives and FED sections representatives.

4. As a result, the idea of having an in-house electronic system was selected.

Challenges

1. Nevertheless, many challenges were faced. There were two types of challenges: on the management system level (e.g. related to the accreditation of paperwork system for ISO 9001 and ISO 17025) and on the technical system level (e.g. integration of the calibrated instrumentation with the LIMS system). FED has overcome all the challenges by leveraging the FED LIMS, which in return became the system with a strong structure, acknowledged around the world by an ISO 17025 accreditation agent. The LIMS idea has ultimately won the 2019 Abu Dhabi Police prize for its innovativeness.
2. The challenges encountered before the implementation were motive for such challenges are administrative: 1) using a fully paper based system and the relevant consequences such as the need to archive the cases files. 2) Difficulties in issuing statistics and performance indicators and their unavailability sometimes. 3) Difficulties in following up productivity and performance (on the level of the department, the section, the branch and individuals). 4) The need to facilitate and expedite the communication with the customers and increase their satisfaction. 5) Difficulties in tracking the requirements of implementing international standards applicable in Forensic Evidence Department. 6) Consumption of huge paper quantity and the negative impact on environment and legal compliance. While the technical challenges and issues can be summarized as follows: 1) The human intervention in the technical results through conducting the calculation process and typing the numbers. 2) Transporting the files manually between the various sections and branches. 3) The need to save all the details of the relevant case in one place. 4) Difficulties in following up the test process. Consequently, FEDLIMS development was considered as the ultimate solution to overcome all above mentioned challenges and issues to be a property of Abu Dhabi Police. A system diagram was established covering all the operations of Forensic Evidence Department after consulting the staff concerned with such operations.

9. Acceleration

1. The FEDLIMS team visited FED labs to understand more about the old paper systems in 2011. This helped in conducting the gap analysis process for all tests and labs.
2. Then the team was asked to get familiar with the quality procedures of the FED and related ISO requirements while preparing their studies.
3. More than 20 feasibility studies have been done to include every process in all the FED branches.
4. The project started being developed in 2011, including testing and launching the trial version for each branch. User suggestions were used to help improve the FEDLIMS from the end user perspective.
5. All FED experts and technicians were welcomed to share their ideas to customize FEDLIMS according to their need.
6. A controlled procedure was issued within FED (GP-25) to clarify the FEDLIMS change requests and modification process. There have been more than 639 change requests by FED staff to develop and customize FEDLIMS according to their needs with respect to quality procedures until the end of 2019.
7. The system has been used as a core for innovation encouragement, with 7 projects completed in 2019 within FEDLIMS.

10. Implementation

Implementation Process

1. After proposing the idea of FEDLIMS to the higher management in ADP in 2011, the project has been approved through the Abu Dhabi Police and Abu Dhabi government council along with its budget.
2. The project started by studying one of the basic tests within FED, which was the alcohol test. From 2014, other tests within the department sections were added.
3. The implementation of the new system was verified for at least 3 months for each section.
4. Later on, the system has been customized to fit other tests with FED, meeting the customer requirements with regards to their CLIMS screens as well. Now, all sections are working using FEDLIMS which includes 207 documented tests.
5. In 2016, the system went fully paperless.
6. In 2017, all Abu Dhabi Police customers have been trained to send their request electronically as well through CLIMS (Client LIMS) which is integrated with FEDLIMS. In 2017, the system was implemented by the Abu Dhabi Police, the forensic laboratory in Al Ain and Al Dhafrah, achieving integration to share information. The system was also connected with the electronic fax systems of KSA, Oman and Kuwait clients.
7. In 2018, all police stations and crime scenes in Fujairah and all over the UAE were added for gun licensing (except Dubai).
8. In 2018, the system has been approved to fit laboratory work by UKAS which is an accreditation agent for the ISO 17025. Nowadays, all audits are done by viewing FEDLIMS which facilitate traceability of records within its electronic environment.
9. FEDLIMS has been awarded a certificate of appreciation from Prince Nayef University and a prize from Ajman University during 2018 innovation month. Also, it has recently won the 2019 Abu Dhabi Police police prize for the innovative idea. Recently in 2019, the system had participated in the Prince Nayef Award for innovation and in the MOI innovative idea.

Challenges

Adherence to the “old fashioned” ways of doing work

11. Participants

Most relevant stakeholders

- AD Police IT department
- AD Police CSI Department
- AD Police security Sector (Police Stations)
- AD Police CID
- AD Police traffic sections
- Fujairah Police Directorate

Other stakeholders

- Courts and prosecutors
- Civil Defence
- Ministry of Interior (MOI)

12. Start and end date

Start date (from the ideation phase)
2011-2012 (pilot)

End date (to the implementation phase)
1st phase 2012-2015 2nd phase: Fully paperless 2016 3rd phase: Implementation in other Emirates and with other laboratories (Al Ain and Al Dhafrah) Currently, the Abu Dhabi Police innovation department are processing the intellectual property registration for the system.

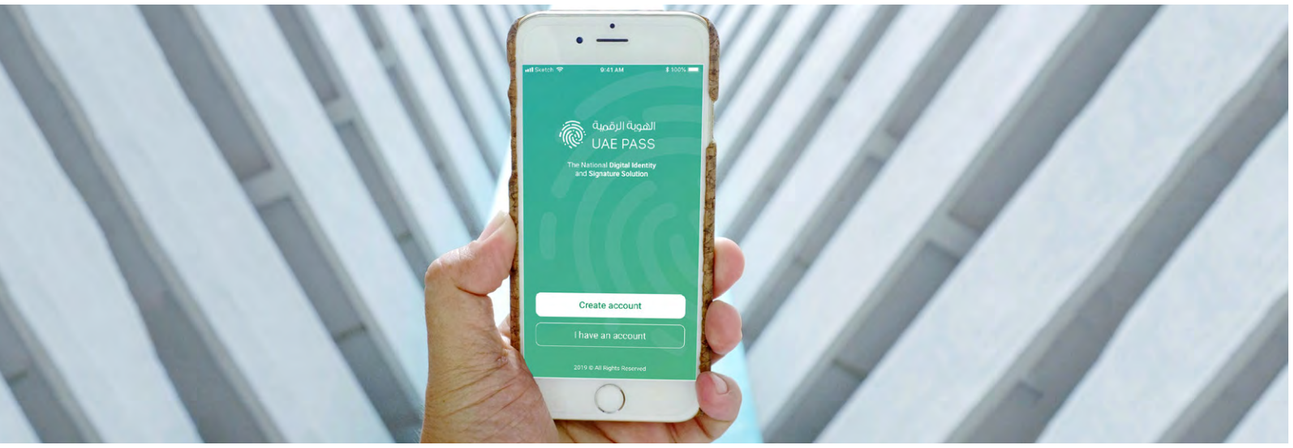
13. Impact and results

1. Connecting more than 110 organisational units in the FEDLIMS system
2. The system reduced the number of steps in the process of managing cases from 6 to 3 steps and associated time from 60 minutes to 15 minutes, leading to a financial saving of 1.75 million AED per year.
3. The process of managing results reduced from 5 steps to 1-3. Previously the results needed to be reviewed; whereas, now the process is automatic with only 1 employee needed to control and report. This allowed for a 7000 hours reduction for 30,000 reports generated on yearly basis, leading to 1.09 million AED savings.
4. For the biological examination branch processes: reduction of steps from 6 to 4, 3000 hours reduction, leading to 0.7 million AED in savings.
5. For the DNA testing branch: reduction of steps from 6 to 4, 4500 hours reduction, leading to 1.07 million AED in savings.
6. For the lineage verification branch: reduction of steps from 6 to 4, 4500 hours reduction, leading to 1.07 million AED in savings.
7. For the doping inspection branch: reduction of steps from 7 to 5, 3850 hours reduction, leading to 2.92 million AED in savings.
8. The system contributed to achieving the goal of the administration to become a paperless department and to cancel printing in all sections. More than 200 printers have been removed from FED and returned to technical stores.
9. The system acts as a database providing more than 180 statistics and performance indicators (KPIs) for the management of forensic evidence, thus having a positive impact on the FED staff and clients, expressed through a high satisfaction rate of 94.58% and 93.75% respectively.
10. Social support provided for the generation of death notification letters within two hours, reducing the emotional load on the relatives.
11. Support to different external entities and customers.
12. Support in decision making and employees management.
13. New projects have been developed based on this platform.

الهوية الرقمية
UAE PASS

UAE PASS

Telecommunications Regulatory Authority (TRA), Smart Dubai, and Abu Dhabi Digital Authority (ADDA)



1. Description of the innovation

UAE PASS is the country's first national digital ID and a fundamental enabler for the nation's smart transformation. UAE PASS is designed to enable citizens and residents to digitally transact with local and federal government entities, in addition to various private sector entities across the UAE. It allows for such digital features as authentication, documents signing and transactions. It also provides the capability of a digital vault that allows users to request and store digital versions of their official documents and credentials issued to them. While incubated by Smart Dubai, the innovation has been escalated through close strategic cooperation with the Telecommunication Regulatory Authority and the Abu Dhabi Digital Authority. It is adopted and used today by all other emirates' local government authorities as a result of the efforts led by the Smart Government agencies heading and supervising the integration efforts in each emirate.

It utilizes the national public key infrastructure for digital certificates and is based on national identity cards.

Overall, UAE PASS encompasses three key features: authentication, digital signatures, and digital vault, in addition to an extra feature for electronic seals.

The three main features of UAE PASS can be described as follows:

1. Access and authentication: access is validated through mobile-based identity which is connected to the National Emirates ID card upon registration and validated using the scanning of cards and fingerprints at the kiosk or virtually through facial recognition.
2. Digital signature: available to digitally sign official documents anywhere and at any time through the user's smartphone. Few banks have integrated the UAE PASS digital signatures in their services, and more are expected to join in 2020.
3. Digital vault: available for any individual to request and store formal credentials and documents which are issued by different authorized issuers in the country and share them digitally. For example, in the case of a bank transaction the user may share his/her official digital document (i.e. Emirates ID), after requesting it from ICA and storing it in the UAE PASS digital vault. Emirates NBD is preparing to launch this function fully by the end of August 2020, which will eliminate the need to physically visit a branch to open a bank account.

User journey for verification and enabling signatures:

- Kiosk Visit
  1. Download the app.
  2. Create an account/scan Emirates ID.
  3. Set up a basic account (i.e. verified mobile number and email address, etc.).
  4. Visit the kiosks to verify your identity through inserting your Emirates ID card, scanning and verifying your fingerprint.
  5. Create a signing password for signature transactions, which upgrades your basic account into a qualified and secured account.

*The Verified account can be also obtained by individuals through verifying their previously owned accounts in the former identity systems such as Dubai ID or Smart Pass, giving users an advanced UAE PASS account.

- Facial Recognition
  1. Download the app.
  2. Create an account/scan Emirates ID using the mobile.
  3. Set up basic account (i.e. verified mobile number and email address, etc.)
  4. Verify your identity using facial recognition technology.
  5. Create a signing password for signature transactions, which upgrades your basic account into a qualified and secured account.

The UAE is the first country in the world to verify digital identities securely using Facial Recognition, which eliminates the need to visit kiosks. The solution, currently under development, verifies user ID by scanning his/her Emirates ID and verifying his/her account through taking a selfie. Once Emirates ID is scanned and a selfie is submitted, the user information is fetched from authorized sources in the country then shared with the designated authorities to verify and match the ID with the user's account.

2. Objectives of the innovation

Main objective

Further enable the digital transformation of government services and improve the digital experience between customers and government service providers by offering a secure and reliable single platform for identity and signing transactions.

Other objectives

1. Support the achievement of the UAE Centennial 2071 and UAE Vision 2021.
2. Establish a national, single, trusted and secure identification mechanism for all users of digital services in the whole government of UAE.
3. Create a secure mechanism of digital signature that is court-approved.
4. Develop a user-friendly and unified experience for authentication and signing, which can be used in all digital services interactions in the country.
5. Collaborate with the private sector to unify the digital customer experience in the digital services.
6. Develop the digital vault for individuals to access government credentials and documents, eliminating the need to process them in paper and ensure reliability and credibility of the documents shared with service providers.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Contributing to UAE's ambitions of having Global Impact enabling "Agile Government", and "Advanced Economy" as main aspects.
2. Aligned to the human-centric purposes through the 'Technology for Humanity' component.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Decreased the cost of living for citizens / residents
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

20,000,000 AED

7. Development stage

The innovation is currently in the scaleup and support phase.

UAE PASS is currently live with full functionality and goes under continuous improvements and features enhancements.

8. Ideation

UAE PASS initiated as a strategic requirement from the Annual Government Meetings initiative of the UAE Government back in 2016. The owner entities then signed MoUs to collaborate on the execution and delivery of the program.

The ideation stage began with a comprehensive benchmark of global national digital identity platforms including and not limited to Estonia, UK, Denmark and Belgium. In collaboration with the owner entities and other government service providers, it was decided to pilot the feature for the Ease of Doing Business initiative (i.e. Bashr service), a service managed and overseen by TRA and delivered with the cooperation of all economy departments in the UAE and the Smart Government agencies. This MVP was developed in April 2018 and it allowed businesses to finalize the process of establishing legal companies by digitizing the process of signing the memorandum of association(which used to require a physical visit to service center). The outcome was the ability to conclude this process in 15 minutes.

The next milestone was to roll out UAE PASS as a broader platform that covers all digital services, which was achieved with the official launch at GITEX Technology Week 2018. Following the launch, all efforts were focused on involving entities and integrating government service providers. As a result, more than 75 entities were integrated by the end of 2019.

Prior to UAE PASS, Smart Pass and Dubai ID were the solutions used to access government services. As UAE PASS moves forward, it is planned to decommission both Dubai ID and Smart Pass by the end of 2020 and to replace them with the UAE PASS.

Subsequently, the aim was to enable the private sector to utilize UAE PASS, particularly the financial and banking sectors. To this end, the owner entities held multiple thorough conversations and collaborations with the UAE Central Bank, which circulated a memo requesting all banks and financial institutions to regulate the use of UAE PASS for banking transactions.

As of today, more than 20 banks are in the pipeline to roll out the integration with UAE PASS. Furthermore, the telecommunication sector was identified as a strategic area, for which the owner entities also managed to improve current regulations with the Telecommunications Regulatory Authority to permit the use of UAE PASS in their sensitive transactions.

9. Acceleration

Signing an MoU between Smart Dubai and the TRA was the initial step for the collaboration, which resulted in focusing the efforts of the technical, governance and policy domains for the program. The alignment with strategic stakeholders, which were the economic departments in each government entities, also ensured that the project is put on high-priority and is fast-tracked to meet the pilot launch target date of April 2018. The owner entities hired a local partner company (after an RFP process) to carry over the design, development and deployment of the platform in collaboration with a global partner providing the core platform and technology. The MVP was launched targeting one service: Bashr (Ease Of Doing Business), timely achieving the expectations.

10. Implementation

The project was implemented in collaboration between all stakeholders: Smart Dubai as main technical operator, the Telecommunications Regulatory Authority as governance and policy lead, Abu Dhabi Digital Authority as main strategic partner, DESC as Public Key Infrastructure services provider, and ICA - Federal Authority for Identity and Citizenship as Public Key Infrastructure services and Emirates ID provider. The implementation was successfully concluded in October 2018 followed by the official launch in GITEX 2018. Afterwards, the entire platform source code was handed over to Smart Dubai who handles all of the subsequent development, deployment, support and operations activities.

Today, UAE PASS is integrated into more than 95 entities with over 200 channels enabled (mobile and web). The overall number of users is more than 698,280 out of which are 250,830 verified users. Verification kiosks are available in more than 300 locations across the UAE. There is also a pipeline of more than 20 banks lined up for integrations with UAE PASS services amid Central Bank's official endorsement of UAE PASS platform to be used for banking and financial services in the UAE. 95% of what UAE PASS has achieved is organic (no national campaigns).

Telecoms are already onboard, and UAE PASS has started onboarding the private sector to the platform through exploring opportunities to include services and transactions such as signing tenancy contracts, which would result in integrating Ejari, one of the core services in Dubai Land Department. In addition, business licensing is another service under consideration with different economy departments across the country.

Eyeing more advanced features, UAE PASS is currently working to provide an authorization signature tray, which will enable individuals to authorize transactions for online government services. In the long term, UAE PASS aims to have cross-border acceptance of the national digital identity. Therefore, it is in compliance with the European Identity Standard (EIDAS) and is closely following up on the changes in the standards to update the platform accordingly.

Also, seeking full adoption, the Emirates ID is in consideration to be linked to the UAE PASS at the time of the Emirates ID issuance (i.e. to receive the digital ID together with the Emirates ID) as part of the program roadmap.

11. Participants

- Smart Dubai
- Telecommunication Regulatory Authority
- Abu Dhabi Digital Authority
- Federal Authority for Identity and Citizenship
- Dubai Electronic Security Center
- Ministry of Interior

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
October 2017	April 2018 - MVP launch October 2018 - Full launch

13. Impact and results

General information

UAE PASS created a national, single and secure digital identity that all government service providers can trust and through which they enable individuals to access their online services, in addition to the digital signature and digital vault features.

The objective of having a nation-wide trusted digital identity platform, that enables digital and secure access to government services as part of the UAE's digital transformation strategy, is achieved.

It is a big milestone for e-government services, which in return increases efficiency, productivity and transforms customer experience.

Current statistics (as of March 10, 2020):

1. 698,280 total users
2. 250,830 total number of verified users
3. 30,000 average active monthly users
4. 95 service providers integrated over 200 channels (mobile and web)
5. Over 5,000 services accessible via UAE Pass
6. More than 300 kiosks across the UAE used for upgrading users profiles
7. The UAE is the first country in the world to verify digital identities securely and completely virtually using Facial Recognition, which eliminates the need to have physical verification visits.

Most Federal and Local Government entities are connected; however, not all are on-boarded from digital vault issuers entities, – the UAE PASS team expects to connect most of these entities by 2021.

14. Other implications

The need for service centres and front-desk employees will have to be revised. There may be a need to create awareness campaigns to reduce fears of legal pitfalls. The law governing electronic transactions using electronic signature already exists in the country, with which the UAE PASS is fully compliant. Now, a new law is expected to be drafted supporting the validity of digital signatures.

Criminal Map

UAE Public Prosecution

1. Description of the innovation

The heat-map is used to visualize data, analyze and assess criminal behavior over geographic space, while delivering statistics based on city, crime, nationality, gender, age and education level. The map uncovers differences between urban and rural areas, since cities may experience high volumes of crime in hot spots and can be targeted to reduce crime in such areas. Examining where crimes occurred determines which areas attract offenders and where unknown offenders may reside.

The solution adopts AI techniques and big data in the area of crime, based on the data on more than 10 thousand cases in the electronic criminal system (e.g. communications, details about criminal cases, the type of crime, place/ date of occurrence, date of occurrence, the rationale of a criminal offense and offenders, sexual offenders, victims and their age and cultural level, the measures taken by the competent authorities) and displays it in the form of thermal maps. It is used in decision-making, following the chronology of the procedures, creating statistics and crime prevention.

The system is also developed with algorithms and functionalities that predict future risks by collecting and examining regional data and criminal behavior over a long period of time. The data is used to predict future crime trends and develop prevention strategies.

Abu Dhabi, Dubai and Ras Al Khaimah are not on the current platform as it is out of the scope of the entity and collaboration among them has not been established.

On the other hand, Sharjah is the biggest emirate involved in the initiative.

The solution works in six steps:

1. Data Collection. Review the extracted data from the system.
2. Data Analysis. Analyse statistics and indicators in coordination with external parties.
3. Forecasting. Use data to look into the future of crime.
4. Documentation. Document findings and shared with the UAE General Attorney.
5. Decision Making. Take appropriate actions based on the reports submitted.
6. Feedback. Evaluate work and provide performance correction measures.

The reports and outcomes of the data analysis provide information for the relevant entities to act and prevent identified crimes.

2. Objectives of the project

Objectives summary

1. Keep pace with the technological development, making the best use of modern technologies, including big data management tools, in the field of combating crime and improving the services in the public prosecutionCreate statistics that would help all government agencies within their jurisdiction to take a proactive approach in preserving society, enhancing its security and crime preventative measures
2. Become proactive at predicting criminal behaviour of individuals, groups and society
3. Assist decision makers in identifying legal deficiencies and gaps to assist during early discussions on the introduction of legislation related to crime
4. Provide an accurate and reliable method that helps in studies to anticipate crime, study community behavior, criminals' behavior, and develop preventive community solutions for that.

Direct objectives

1. Enhance the efficiency and effectiveness of crime control and help the General Attorney office in managing crime by analysing big spatial and temporal data.
2. Support decision-makers at understanding crime patterns and trends
3. Support at assigning work force based on load balancing and the number of open cases
4. Help in resource allocation according to the geographical locations of crimes.
5. Help other entities such as police and the Criminal Investigation Department (CID) by providing them monthly statistics and future predictions.

Long term objectives

1. Generate real time alerts for patrolling police or resources on the mobile app (to be developed in the future).
2. Integrate traditional and non-traditional law enforcement data in cooperation with other government institutions to enhance the quality of crime analysis. By incorporating traditional law enforcement data with such data as population density, the type of visa the offender holds and the companies issuing visas to visitors, the crime map system can be used to transform data into actionable intelligence.

Other objectives

1. For the UAE to become the safest place in the world
2. To improve international indices of law enforcement, quality and flexibility of the jurisdictional system

3. Link to the National Advanced Innovation Strategy (NAIS)

Support the development of smart ecosystems and usage of advanced technologies, such as artificial intelligence, under the 'Technology for Humanity' purpose

4. Type of value created

- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Decreased the cost of living for citizens / residents

6. Budget

700,000 AED

7. Development stage

The innovation is currently in the scaleup and support phase.

The project has passed the implementation stage. It is currently deployed on the internal servers and needs to be scaled up. Further data, such as demographic statistics, will be required from different external entities in the upcoming phases to be integrated into the crime map system.

8. Ideation

The innovation was initiated as a result of the appointment of the new General Attorney in 2016, who requested the team to identify and develop a solution to manage information accurately in order to improve their decision-making process.

The idea behind the crime map was to create an artificial intelligence based engine, to which many different entities could connect and get the desired statistics, eventually helping the country to manage the city more effectively and proactively, as well as bring down the crime levels. The Public Prosecution department hired a company based in Abu Dhabi, which is working on an AI-based development.

All the developments were kept in private environment, and the servers were set up inside the department's office where the current software in production is installed. The team continued feeding inputs to the development team after conducting internal brainstorming sessions. As soon as some of the expected data points were received, the team started working on the User Interface (UI). The inputs were taken from the higher management and the statistics needed from the engine to design the UI.

9. Acceleration

Description of the acceleration phase

Based on the mechanism that was set for working on the data before 2018 and the reports that were submitted to the leadership and decision-makers,a directive was given from the Attorney General outlining the importance of collecting and analysing the crimes data. The directive also emphasized the need to provide more efficient and effective reports to help in making knowledge-driven decisions.

In 2018 a team was established with the aim of preparing a platform for collecting and analysing crime-related data using artificial intelligence technology, smart analysis of data and information tolls, as well as enabling the display of data using graphics and figures.

The joint work was carried out with the partners, with the aim of identifying their needs and demands to be included on the platform. At the end the platform was called "The Criminal Map".

10. Implementation

Description of the implementation phase

During the implementation phase, the in-house IT team and SECUIRA worked in parallel to deploy the server configuration. After that, a new database was created by internal data specialists. In its current form, this database contains the data points needed to be fed into the AI engine to deliver predictive analytics and generate statistics. The data is updated twice a day at fixed time intervals. This information then is displayed on the main UI, along with statistics, predictions, and other features like advanced-search and data-filtrating.

Future opportunities

1. The data base can be enhanced by incorporating the investigation data. Currently it is not possible because the data is in Arabic, therefore only numeral information is included.
2. Make the solution more sustainable so that stakeholders could use and develop features themselves
3. Collaborate with the Ministry of Education
4. Find companies to develop the Criminal Map further by adding more features and enabling it to work with more data
5. Reach the whole UAE
6. Develop a criminal map that is unique and provides a historical perspective of all people in the UAE society, nationals, expats and individuals.

Challenges during the implementation

1. Finding the right company to develop the software
2. Adjustment in the infrastructure of the penal system of the Public Prosecution
3. Integrating the system to the Arabic language
4. Linking with security systems nationwide

11. Participants

- GA Office
- Information Technology Management
- Federal Investigation Office
- Department of Information Technology
- SECUIRA Technologies Security Systems LLC
- Ministry of Interior
- Ministry of Happiness
- Community Development Authority
- General Command of the police - All local Emirates
- Security Services
- Childhood centers nationwide

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
Project start (Ideation): November 16, 2016 Implementation approval: December 29, 2016 Testing: October 2018	Implementation completion: December 31, 2018

13. Impact and results

Major achievements

1. The crime map gave more control in managing the workload in all prosecutions by generating statistics and graphs based on the number of open and closed cases, as well as tracking the flow of procedures in all prosecutions. This resulted in more than 33 reports submitted to Attorney General.
2. The map has also provided predictions for criminal behavior of individuals and groups based on crime, nationality, locations, gender, education level and age. Accordingly, more than 12 precautionary measures have been taken as proactive approaches to reduce crime to preserve the society and enhance its security.
3. Reduction of the rate of theft crimes from 2,220 (2018) to 1,823 (2019)

Other benefits

1. Collaboration among entities to take actions based on the reports
2. Relevant and accurate information is provided to the decision makers for better performance
3. Technology adoption increased for this field (criminalistics, justice, etc.)

AD Locker/ My Wallet

Abu Dhabi Digital Authority

1. Description of the innovation

Centralised Platform

The AD Locker, as part of TAMM initiative under the Government Accelerators Programme - Ghadan 21, provides a user-centric platform that consistently combines different kinds of information across the government entities. It combines user documents, payments and provides an event calendar to begin actions on services, submissions and document validity.

It is a centralised platform that pools user's information and documents in once place. In the AD Locker platform, user can communicate with the government entities through the contact centres to follow up work on his applications and get updates on the in-progress services.

It collects up to 50 digital documents, provides platform to carry out more than 70 payments and follows up the status of hundreds of services provided by Abu Dhabi government entities.

As an example, the solution features the following services:

1. Documents consolidation (sample)

- ID
- Passport
- Insurance
- Business License
- Driver License
- Car Registration
- Tenancy contract

2. Transactions

- Payment of fees and services
- Request for services

3. Events calendar

- Aligned with DCT Abu Dhabi

4. Government entities data base

- Search for entities with a description of their services

The solution is also available in the mobile app version.

Blockchain

To collect the user documents, it uses blockchain as part of the distributed ledger concept that eliminates bureaucratic, time-consuming paper work. This technology was proven to be the safest way to give AD Locker the channels to keep a record of the user's information. It provides a solution to retrieve documents from different entities in the user's profile and re-use them whenever he applies for other services.

Updates/Document Validity

Using digital documents eliminates the need for resubmission when applying for services. AD Locker pulls the necessary information from government entities in real time and makes the necessary updates accordingly. It updates the user's meta-data and sends notifications to keep him up to date.

Through AD Locker, a user can update, cancel or renew documents with no need to visit a government entity or repeat the procedures for other services that require the same document as a prerequisite.

A user can see real-time updates and solve his enquiries on AD Locker. It sends immediate notifications after changes and can trigger a follow up action if needed.

Subscriptions

On the platform, a user has the channels to subscribe to new services, like Etisalat, and to follow up/cancel the old ones.

Customer support

Support covers all transactions done by the user on TAMM. In the Support Centre, a user would chase his complaints, suggestions and reports on incidents along with the Request for Service progress. The available channels allow a user to share feedback and comments on the government entities' services.

Benefits to customers

1. Centralised access: Convenient access to up-to-date personal information on a single platform.
2. Comprehensive information: Full access to all relevant personal information across government entities.
3. Customised experience: Proactive support suggesting necessary actions based on personal situation (e.g. health insurance updates only if national).
4. Seamless experience: Integrated customer engagement and standardized communication style across ADGEs (e.g. same channel and template).
5. Instant notification: Immediate communication of important updates on services or content 1).

Benefits to ADGE

1. Ease of customer reach: Access a consolidated pool of customers across ADGEs with single push message.
2. Action-oriented engagement: Prompt customers to take necessary actions directly through the platform and drive traffic through the platform.
3. Efficient resource usage: Reduce costs by outsourcing customer outreach to a centralized platform.
4. Configurable actions per trigger: Set specific actions flexibly for each trigger (e.g. if bill payment changed, send SMS or email with specific template).
5. Customer insights: Provide reports on customer uptake and usage of services as well as ADGE request fulfilment summary.

2. Objectives of the project

Main objectives

1. Modernise digital services of government entities
2. To manage a centralised access to all the services from all government agencies in one place.
3. To save time and money for both the user and the entities that might result from recurring procedures.
4. To provide an integrated experience of digital documents from all government agencies in one place.
5. To trigger actions on services such as making due payments, extending documents validity and moving to next step of a journey/service to consume the sought value.
6. To follow up the status of services and applications and to be notified on any updates from more than 80 government entities.
7. To access customer support 24/7 in a centralised channel where the user can easily report and communicate his issues with the support team.
8. To manage subscriptions (extend, update and cancel subscription).
9. Provide paperless services

3. Link to the National Advanced Innovation Strategy (NAIS)

Aligned with the purpose of developing smart ecosystems with access to multiple services at any time and place under the Technology for Humanity component.

4. Type of value created

✓ Speed of delivery	✓ Quality of services	✓ Access to services
✓ Employee satisfaction	✓ Communications within organisation	✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Enhanced access to finance for citizens / residents or businesses
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Development stage

AD Locker is live and available for TAMM users. It is constantly being enhanced, scaling up operations. Today, it is used by tens of thousands of users.

7. Ideation

AD Locker, within TAMM, is an unprecedented solution that was innovated by the Government of Abu Dhabi to maintain economic acceleration. TAMM is part of the Government Accelerators Programme - Ghadan 21, the AED 50 billion three-year programme launched by HH Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces and Chairman of the Abu Dhabi Executive Council, in 2019 to drive the Emirate of Abu Dhabi's development through investment in business, innovation and people.

ADDA was seeking to consolidate the users' documents, payments, subscriptions, and events from multiple ADGEs and make them accessible through one centralized channel.

For ideation, an initial workshop was held to define documents and content/fields to be considered.

8. Implementation

Implementation process

1. Technical workshop: discuss design and plan implementation with ADGEs
2. Review and finalize API specification
3. Implement push messages and pull APIs
4. Align AD Locker and AD connect for new content type
5. Conduct integration tests

Challenges

1. Interaction with customers: continuous training for our training about new services and journeys
2. Dependency on government and private entities readiness to onboard

Future plans

1. Features to be added:
   a. Video and sharing screen functionalities for call center services and validation purposes
   b. Chatbot for customer service
   c. Information center
2. 6 by 6: To be launched on 6 June, offering 500 services under 6 min
3. 12 by 12: To be launched on 12 December, with an increase number of services added to the mobile application
4. More hospitals, banks

9. Participants

ADDA (Development & management)

1. Abu Dhabi Digital Authority (ADDA) is responsible for helping the ADGEs (Abu Dhabi Government Entities) to communicate and implement the digitalisation of their services for integration. It manages the TAMM factory and coordinates the communications between different stakeholders from one side and the developers/service designers on the other side.
2. ADDA supports ADGEs with design of data-push mechanism to push the details and service-related details into the AD Locker (and TAMM);
3. It develops the endpoint in AD Connect to maintain a complete cycle of service designs and delivery;
4. It carries out the necessary implementation to prepare AD Locker to process different types of content; and
5. ADDA configures the update mechanism to cover all types of service content.

ADGEs

1. The ADGEs build the functionality in the backend systems to push updates (data) into the AD Locker (for example, documents, attributes and new due payments)
2. Invest its time in getting the push-mechanism ready on the backend systems.
3. List of ADGEs:

ADP	DOH
DMT	DOT
DOE	Etisalat
AADC	First Abu Dhabi Bank
ADDC	SEHA

Users

The user is the centre of TAMM interest and care. The user satisfaction is the core goal of the programme (TAMM including AD Locker).

10. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
In 2018, AD Locker was launched as part of TAMM website in-built integrated user experience.	AD Locker is an endless initiative that is meant to service users on of a kind-platform.

11. Impact and results

Impact and Results Achieved

1. 55 digital documents
2. 55 government entities
3. Over 20K downloads of the app
4. 2-5 million visits per month to the portal
5. 65,000 users
6. Approximately 350 services. The solution groups different services to address "All life events"
    a. Buying a house (incorporating banks, municipality, Housing authority, developer, etc.)
    b. Guide to trade. In partnership with Abu Dhabi Customs and all the registered clearance instances for shipping are in one place
    c. "Get Married"
    d. Death journey
    e. Start a business
    f. Rent a house
    g. Buy-sale a house
    h. Education
    i. Newborn
    j. Other
7. Industries in the network:
    a. Communications
    b. Banking
    c. Healthcare
    d. Water and electricity
    e. Airports to be connected

Impact and Results (Expected: Economy & Government Performance)

1. Increase of ADGEs productivity of services as AD Locker (as a key foundation of TAMM) guarantees 24/7 access to services and customer support;
2. Elimination of ADGEs functional limitations by saving time spent for conducting up to 100,000 transactions on daily basis. It is envisioned to cut 99% per cent of daily transactions;
3. Saving most of time consumed to process systems load. It is envisioned to cut 12.9 hours out of 13 hours total time with high system load at the ADGEs;
4. Efficiency of services and costs of operations and increasing the ADGEs ability to develop and configure endless updates;
5. Maintained customer information consistency and accuracy across the government systems keeping in mind the distributed ledger concept ensure security and stability of information influx into and from the government systems.

Impacts and Results (Customer)

1. Convenient access to the user up-to-date personal information on a single platform with centralised processes;
2. Comprehensive information in one platform from across government entities;
3. Customised/seamless experience through integrated engagement and standardised communication style across government entities; and
4. Real-time updates and instant notification that gives users immediate communications on important updates of services and content.

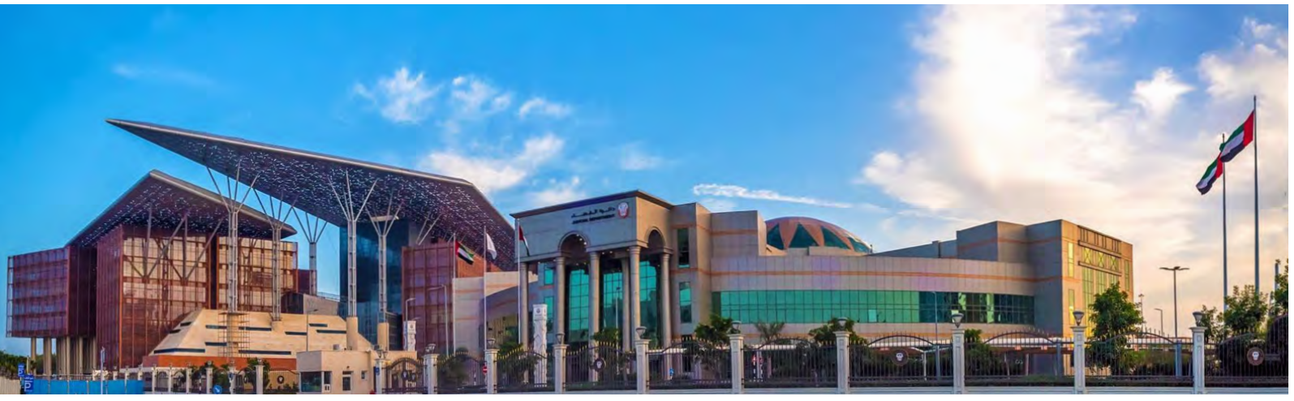
Impacts and Results (ADGE)

1. Ease of customer reach by having a consolidated pool of customers on one platform that can address all users with one message;
2. User engagement through prompt requests to take actions and drive processes through the platform;
3. Efficient use of resources that results in reductions of costs;
4. Trigger (configurable) actions by having a set of flexible actions on subscriptions, document validity and service steps; and
5. Customer insights from the usage of services in addition to the ADGE's requests for feedback.

دائـــرة الـقـضـــــاء
JUDICIAL DEPARTMENT

Digital platform for authentications Attestation Digital Platform

Abu Dhabi Judicial Department



1. Description of the innovation

The solution represents a digital platform with a comprehensive list of all Judicial Department services that can be automatically filled into the pre-approved templates submitted by customers instead of open text spaces for manual submission. It also allows to use the Emirates ID card to automatically fill in the sections of the forms related to personal information.

It provides an automation of the application process by issuing a notarization certificate documentation to the customer in question without the need to fill out a request form and then type the document to be approved. The platform efficiently extracts the personal details from the ID card and sends an application for approval.

The platform provides customized versions of the documents to be attested as needed by the requesting entities. The application is filled on behalf of the customer and in a manner that reflects the requirements of that entity so that the customer does not have to review the ADJD Notarization Section to submit the application. This reduces the possibility of issuing certificates that may not be compatible with the requirements of other entities.

Main characteristics

1. An integrated digital platform for attesting services in an innovative and creative way, and enabling self-use by customers, partners and stakeholders.
2. Reliance on the UAE ID card, which allows the customer to use the platform and access attestation services without having to wait or submit paper documents.
3. The platform supports Arabic and English.
4. Provision of pre-approved and documented forms without the need for reformulation or legal review.

Steps and process

1. Attestation services are available through kiosks located at the corresponding entities.
2. Users insert their Emirates ID to extract and pre-fill forms automatically or fill them out manually. Auto-filled forms can also be manually edited by users.
3. Users then navigate through the platform to select the type of service that is required. Options are pre-set and are readily available for users to select from. Users can select several documents at the same time.
4. The final submission process includes users getting notified through SMS on their mobile phones with a reference number along with a satisfaction survey to be optionally taken.

The process with the new platform allows users to request attestation forms in only 30 seconds as opposed to 15 minutes previously (which required users to manually request the attestation, and also depended on the number of people at the waiting room)

This new service has reduced the average waiting time and eliminated many steps including the need for an attestation officer to check for contradictions.

2. Objectives of the innovation

Main objectives

1. Simplify procedures in order to achieve institutional flexibility using digital technologies which in return aim to make customers happy and reach corporate leadership.

Other objectives

1. Provide an automated application process for obtaining the service which in return enhances the provision of high-quality international services
2. Adopt creative ideas that contribute to achieving strategic goals and priorities and fostering institutional innovation
3. Improve judicial and notarial processes and services and enhance the performance level
4. Enhance partnerships with the stakeholders and meeting the needs of the customers in a way that exceeds their expectations
5. Contribute to achieving the Vision of the Emirate of Abu Dhabi by:
    a. Contributing to the digital government goals
    b. Enhancing the confidence of customers and the public
    c. Building strategic partnerships with the community and government entities
    d. Reducing the use of energy and gas emissions and regulating the use of transportation
    e. Providing multiple channels of communication to provide service, especially in Malls and other government entities

3. Link to the National Advanced Innovation Strategy (NAIS)

Supports the development of smart ecosystems and increases accessibility to services under the 'Technology for Humanity' purpose.

4. Type of value created

- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Employee satisfaction
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

In-house

7. Development stage

The innovation is currently in the scaleup and support phase.

Current State

1. The platform now benefits the following entities: Tamm Center, Emirates Red Crescent Authority, Zakat Fund, Community Development Department, and Ministry of Social Development
2. Customers that require documents from entities that are not registered with ADJD are still required to visit ADJD sites to apply for the documents
3. Previously, the service was only available for customers to request attestation services. Since February 2020, the service was made available to other entities which can now request document attestation on behalf of a customer
4. The project is complete and is currently in expansion, continuous improvement and development stage

Future considerations

1. Work is underway to increase the number of external partners so that they can use the attestation platform
2. In order for the documents to be legally compliant, attestation certificates are only provided in Arabic. However, works are in progress to introduce more languages in the future
3. ADJD aims to add new languages to the platform, including Russian, Chinese, Urdu, and Filipino
4. Work is underway to study the launch of a mobile version of the platform that is accessible via smart phones
5. The team is also working to adopt the video conference attestation service towards the last steps to prove the identity of the user applying
6. ADJD's Integration Hub will also host the system
7. The digital signature feature will be added to the system

8. Ideation

The ideation process

1. The idea was submitted by the Director of Courts and Customer Support Services Sector
2. An internal brainstorming meeting was held to discuss how to implement the idea
3. A working group was formed to study the project
4. A task force has been formed to begin implementation

9. Acceleration

1. Approval of the project was granted and the implementation process began
2. Challenges were discussed through continuous meetings and brainstorming, ensuring provision of technical and logistical support to facilitate execution
3. The project was given priority by the ADJD fsenior leadership to speed up the implementation process
4. Continuous coordination and follow-up with the partners involved to speed up the implementation process
5. Reporting on the project was done continuously to the senior management

10. Implementation

1. Final approval was obtained to start the implementation process
2. The project team implemented the project according to the implementation plan
3. Implementing the idea in several stages using such means with the support of the innovation laboratory and follow-up processes
4. Forms and declarations were formulated and legally reviewed to be included on the platform, and related challenges were addressed
5. Multiple forms were integrated and reclassified in line with the services provided via the platform
6. The platform was connected to internal systems
7. Necessary tests were performed to ensure that it is easy to use and that it is hassle-free for the customer
8. A date was set to launch and activate the platform
9. A marketing campaign was launched for the platform through the means and channels of internal and external communication

11. Participants

Internal partners include

- Project Team
- Notary public and Attestation Division
- IT Division
- Customer Happiness Section
- Media Center

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
24/09/2018	19/05/2019

13. Impact and results

Environmental Impact

- Reduced paper usage by 90% by combining different requests of validation in one attested document
- Reduced electrical energy consumption
- Reduced visits to service locations and transportation use by 30% taking advantage of spaces at the waiting time to obtain the service

Social Impact

- Meeting the community needs and facilitating access to the service.

Financial Impact

- Generated revenues by charging for all non-charity related services
- Reduced chairs and parking spaces to obtain the service
- Reduced use of transportation
- Free service to customers and stakeholders

Customer Impact

- 95.7% customer happiness
- Reduced waiting times (reduced from 45 minutes to 5 minutes)
- No more queues
- Free service
- The service is accessible from several places and channels
- Since May 2019 to February 2020, 25,000 transactions have been made.
- Reduced cases where errors occur due to customers applying or receiving the wrong documents, which increased previous processing times and the cost on the customer
- Reduced “abuse” by customers who previously would request documents that are not required by them

Impact on employees

- Reduced dependence on staff who are asked to perform other tasks
- There used to be about 10 employees to provide the service such as receptionists, typists, security staff
- Judges are no longer required to validate content as forms are now standardized

Enhanced Partnerships

- Building partnerships with other government entities and institutions to provide high-quality leading services
- The service is accessible by government entities and partners

Institutional innovation

- Achieving strategic goals and performance indicators related to ADJD strategic plan for innovation
- Encouraging employees to innovate

Other impact

- Reduce the time of completion of a transaction to approximately 5 minutes from the start of the process until its completion
- 7101 applications treated in May 2019
- Reduce the need for reviewing
- Simplification of procedures for the completion of the authentication certificates
- Increase in customer satisfaction by nearly 100%
- Improved data quality

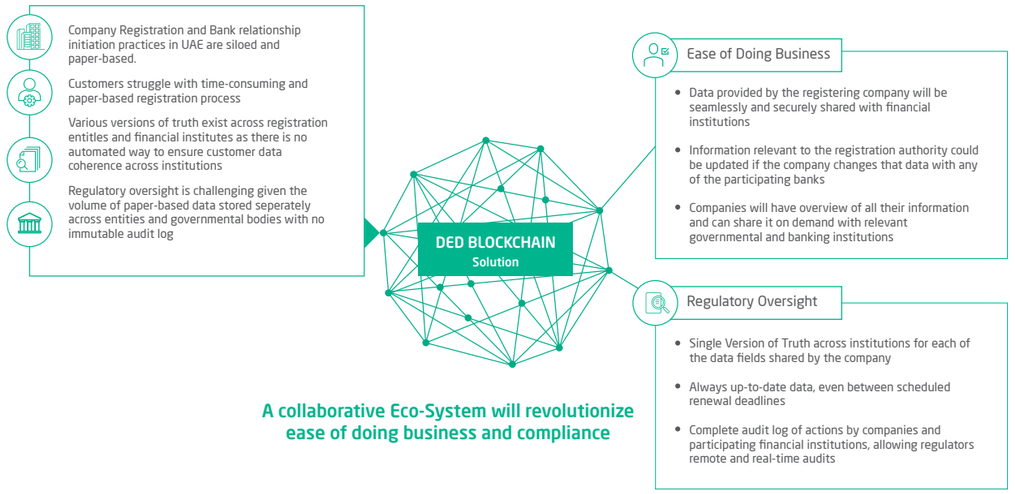
DED Blockchain Initiative

Department of Economic Development (DED)

1. Description of the innovation

As part of a collaborative effort to revolutionize ease of doing business, providing seamless registration and onboarding, better compliance, enforcing data coherence, DED embarked on its strategic journey to implement a blockchain solution that aligns with leadership's vision and aspiration of improving the UAE's global rankings in 'Doing Business' and 'Competitiveness' index as well as transforming Dubai and the UAE to become a preferred destination for setting up successful businesses.

Key Challenges



A collaborative Eco-System will revolutionize ease of doing business and compliance

The Innovation Project is phased to cover all key stages of customer journey in obtaining the business license including "Operations Commencement" during the post setup stage.

To be a participant of the platform, entities have to follow the journey outlined below:

1. First, a formal business case between DED and the participating entity is developed.
2. With the approval of the business case, a data mapping exercise is initiated along with a formal agreement to ensure all legal aspects are covered.
3. A business workshop is conducted to brief on the blockchain solution, business use cases, along with a compressive list of onboarding options available for newly joining entities, covering both on-premise and cloud-based hosting.
4. As the next step, the DED team conducts a technical workshop and shares the technical and security specifications including APIs, access tokens and IP whitelisting requirements.
5. A digital enrolment certificate is issued to the new joiners based on the consensus mechanism of consortium members; this allows to identify themselves in blockchain network.
6. Finally, a smart contract that permits data sharing between ecosystem members is created; then, integration testing is conducted to confirm successful participation in the network.

The project is integrated and synchronized with existing licensing and registration systems of participating licensing entities. The flexible design of the blockchain network enables a consortium member to join the network based on their infrastructure preference.

Currently the innovation has the following information:

1. Business License	2. Company Registration	3. Trade Name
4. Business Activities	5. License Members	6. License Address

The project complies with the Dubai Blockchain Policy and is aligned with the Dubai Data Law and major European GDPR principles. All customer data is stored on the DRILL (Data Redundancy In Legal Limitations) layer, while metadata, verification stamps and audit data are stored on the blockchain itself; however, consent of the data owner needs to be given for members to access the data; this guarantees security of data on the blockchain platform.

2. Objectives of the innovation

Main objective

In alignment with DED and the overall government strategy, the innovation aims to contribute to the improvement of the UAE ease of doing business ranking through digitalization of its services and activities, engaging both private and public sector entities to address current and future challenges.

These challenges extend outside the direct area of influence of the Dubai Economy (DED) - "Innovation beyond borders".

Other objectives

Ultimately, DED wants to achieve the following goals through the Business Blockchain ledger platform:

1. Have all business registration entities on the platform for data coherence.
2. Have all NOC issuing authorities on the platform to streamline processes.
3. Provide seamless journey and improve experience of the business community by providing a comprehensive one-stop solution for their business needs.
4. Enhance transparency and alliance between business registration authorities to promote better regulations and governance.
5. Integrate with more and more information consumers to provide easy and secure data access to help them raise their service and regulatory standards.
6. Integrate with financial institutions to reduce their cost burden associated with duplicate and cumbersome customer data gathering efforts.
7. Integrate with other blockchain networks, e.g. KYC (Know Your Customer), UAE Trade Connect and Digital Silk Road to extend value added services to businesses.
    a. KYC: to facilitate digital bank account opening for companies.
    b. UAE Trade Connect: to extend credit services for companies.
    c. Digital Silk Road: to expedite trade supply chain for companies.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Support the adoption of future technologies in different national sectors under the 'Technology for Humanity' purpose.
2. Support achieving cyber security and ensuring ease of access to services at any time and place under the 'Technology for Humanity' purpose.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Communication within organisation
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Enhanced access to finance for citizens / residents or businesses
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Development Stage

The innovation is currently in the scale up phase.

The nearest forthcoming initiatives involve:

1. Integration with other blockchain networks such as UAE Trade Connect, Digital Silk Road.
2. Implementation of additional use cases to benefit customer journey.
3. Onboarding additional financial institutions at national level.
4. Onboarding additional free zones contributing data.
5. Onboarding government entities consuming data.
6. Expansion to other emirates licensing entities and free zones.

7. Ideation

The ideation phase started with the brainstorming session with the key DED stakeholders, continued to the development of the user journey maps and finished with business process engineering.

The customer journey maps were done for processes across 8 different entities beyond the DED scope, with entities represented from private and public sectors: from the client ideation process to completing the requirements for the trade licenses (such as opening a bank account, and obtaining the establishment card for enabling companies to issue visa for employees with MOHRE) and even further to the post-setup stage. Through this, different pain points of the journey were mapped.

DED looked at challenges of the 3 main stakeholders related to the process of obtaining a business license: customers, financial institutions and licensing entities.

For customers, the main challenge is related to the process of opening commercial bank accounts and organising the paperwork.

For financial institutions, it is compliance and operational costs associated with opening commercial bank accounts.

For licensing entities, there is no single centralized repository to maintain data that would be standardized across mainland licensing entities and free zones. Mainland branches are not linked to the free zone license and vice versa. Also, it is difficult to identify among free zones if a business is operational or closed.

Another recognized challenge is to conduct trade between a free zone and the mainland.

Thus, the ideation phase consisted of the three main processes: brainstorming, user journey mapping and business process engineering. The tools used were Mind Mapping, Story Boarding, Opposite Thinking and Surveying. As a result of this phase, the new idea was generated with a respective feasibility study and a business case. Consequently, it was presented for approval by stakeholders and the necessary budget was allocated.

8. Acceleration

The acceleration phase started with the design-thinking exercise in a design workshop, after which market research was conducted. The objective of the phase was to come up with the solution design and architecture, candidate blockchain platforms and potential use cases.

Then, with the help of the DED technical team, the Proof of Concept (PoC) was developed, with respective operating and governance models, using the lean approach. At the end, lessons learnt were analyzed and leveraged during implementation of the complete solution.

Thus, the acceleration phase consisted of the following four sub-phases: design thinking, market research, PoC and the analysis of the lessons learnt. The tools used were a Design Workshop, Gartner Research and Blockchain PoC. At the end of the phase, the solution design & architecture was developed, candidate blockchain platforms were analysed and the PoC solution was validated, along with potential use cases to build the operating and the governance models.

9. Implementation

During the implementation phase, the following stages were followed:

1. Development of the Marketing and Onboarding Plan, including awareness campaigns and the plan for scaling the ecosystem.
2. Legal and contracting works, developing MOUs and Agreements, and signing contracts with respective business and technical partners.
3. Program and project management, implementation roadmap, and phased delivery approach.
4. Launch of the blockchain platform using Agile Software Development Life Cycle methodology
5. Operating and governance model
6. Security and risk assessment.
7. Change management and Training workshops.
8. Support and Maintenance.

Throughout multiple phases, the IT Infrastructure Library (ITIL) framework was applied.

Lessons Learnt

1. Compliance with laws and regulations is paramount for the success of an initiative.
2. Drafting MOUs and Agreements upfront helps eliminate unnecessary delays.
3. Stakeholder buy-in and commitment are vital in shaping use cases.
4. Early stakeholder confidence in data mapping, data quality, data sharing and platform security.
5. Establishing a consortium is crucial to facilitate proper decision-making between members.
6. Designing an open architecture, enabling entities to have flexibility in joining the network is crucial.
7. Thorough evaluation of technology cost effectiveness, scalability and sustainability is important.
8. Running the initiative as program with multiple project streams helps to mitigate risks associated with dependencies and member readiness.
9. Proper governance of the platform by relevant regulatory authorities is important.

Thus, the full implementation process consisted of the following eight phases: Communication and Marketing, Legal and Contracting, Program Management & Phased Delivery Approach, Agile Implementation (SDLC), Operating & Governance Model, Security & Risk Assessment, Change Management as well as Support and Maintenance (SLA). During this phase the following tools were used: Awareness Campaigns, Legal Reviews, Program Management, Agile Technique (Product Backlog & Retrospective), Physical and Virtual Meetings, Training Workshops and ITIL Service Management. As a result, the team developed the marketing and onboarding plan, signed MOUs and agreement contracts and created the program roadmap, leading to a successful blockchain platform launch. Then, the platform operation initiated with respective governance and the integration to other blockchains has started.

10. Participants

Regulators and Strategy / Policy Owners
(e.g. issuing the paperless strategy, setting standards):

1. Smart Dubai
2. Central Bank

Licensing Authorities:

1. Mainland
2. Free Zones
3. Other Emirates

Banking (Current):

1. Emirates NBD
2. Emirates Islamic Bank
3. CBD
4. HSBC
5. ADCB
6. RAK BANK
7. DIFC
8. Mashreq

Other Data Consumer

1. DEWA
2. Dubai Civil Aviation

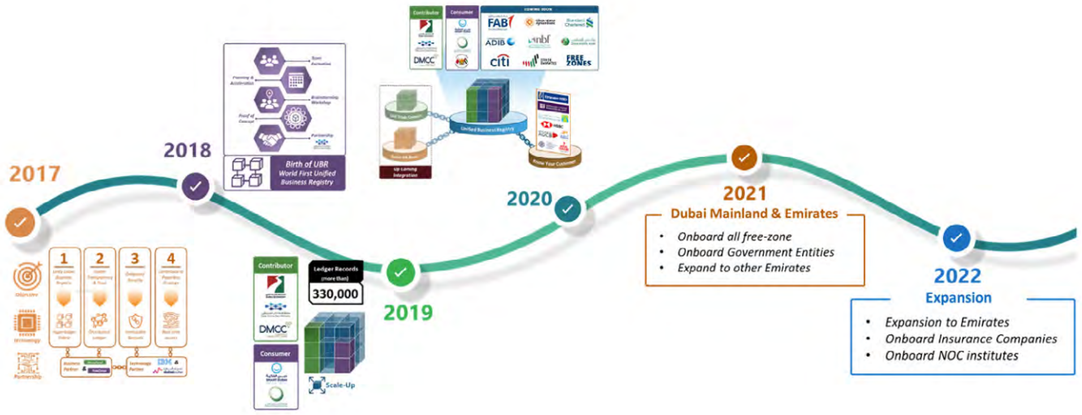
Technology Providers

1. Dubai Pulse (BPaaS Blockchain and Platform Hosting)
2. Norbloc (Fides Blockchain Solution)

There are discussions with Abu Dhabi DED to collaborate in order to enable investors to open branches across emirates.

The Consortium formation is in progress and it will connect all related stakeholders, including customers, banks, free zones and others.

11. Start and end date



12. Impact and results

The progress that has been achieved so far:

1. Platform is developed on BPaaS and launched for production.
2. Onboarding prerequisites are defined.
3. Onboarded licensing entities include DED, DSOA and DMCC.
4. Onboarded financial institutions include Emirates NBD, Emirates Islamic Bank, CBD, HSBC, ADCB, RAK BANK, DIFC and Mashreq
5. Onboarded information consumer entities DEWA and DCAA.
6. Securely sharing authorized information in real time.
7. Extensive and scalable subscription framework is integrated.
8. The feature for controlling data visibility rules via smart contract is implemented.
9. Automated KYC data sharing with financial institutions
10. Launch of instant bank account service for licensed companies
11. Collaboration with other blockchain networks e.g. UTC blockchain and DSR.

Achieved impact

1. 60% of the UAE trade licenses are on the blockchain.
2. Data is automatically and seamlessly updated (i.e. modification, renewal, and cancelation of licenses etc.).
3. Customer journey touch points were reduced by 92%.
4. Licensed companies are able to operate between mainland and free zones.

Expected impact

1. Reduced consumption of paper (100% reduction is expected).
2. Increasing of Customer Happiness above 95%.
3. Free zones will get access to the API to reserve their trade name (all free zones currently use the DED web application to reserve their trade name).
4. The process of grouping the main license and all licensee's branches will become seamless between DED and free zones, including grouping all persons' licenses.
5. Processing NOC (external approvals) between government entities will be seamless and realtime.
6. Manual verification and application resubmissions will be avoided.

الهيئة الاتحادية للهـوية والجنسيـة
FEDERAL AUTHORITY FOR IDENTITY & CITIZENSHIP

Electronic Family Book

Federal Authority for Identity and Citizenship (ICA)

1. Description of the innovation

The UAE family book is a document which contains information about Emirati national's family members, including spouses, children, etc. Most of the government entities around the UAE are required to deal with the family book data and it is considered as one of the major challenges (e.g. for municipality, social security, education, higher college university, and other services). In the past, the family book photocopy had to be attached in the application and, afterwards, manually audited, increasing the risk of fraud. Moreover, the process was taking too much time to complete each application.

The Federal Authority for Identity and Citizenship (ICA) solution is to provide an electronic platform, where government entities can connect and pull the family book data automatically. The data is retrieved as metadata with auto-verification. This helps to eliminate the risk of fraud and data entry errors. At the same time, the platform is integrated with the Emirates ID fingerprint, which is needed to allow data extraction.

All services related to the family book are automated and digitized, making them available through the mobile application and the ICA portal. This allows users to view, edit and apply for the services at any time without the need to attend the service centers for submitting their application.

The services include:

- Issuing a new family book for the first marriage.
- Modifying registration summary data: adding a wide.
- Modifying registration summary data: divorce related information.
- Issuing family book records for a damaged one.
- Modifying registration summary data: adding a baby.
- Modifying registration summary data: death related information.
- Modifying registration summary data: separation of registration for a person exceeding the age of 30.

2. Objectives of the project

Main objectives

1. Facilitate family book data exchange between government bodies and citizens (as well as GCC nationals) electronically without the need for paper registration.
2. Reduce the queues of customers at service desks (which fulfills the UAE government objective by reducing the walk-in customers to the service centers by 80%).
3. Ensure regulations, processes, procedures, and business rules unification by automating and auditing the whole journey, guaranteeing oversight of the whole system.
4. Ensure the maximum level of security, integrity, and reliability by using the Emirates ID and storing the family book details inside a SIM card, eliminating any fraud attempts.

Other objectives

1. Create a green environment.
2. Enforce the digital transformation in the ICA by adopting a new electronic service and reducing manual work.
3. Reduce efforts and time needed for fulfilling other strategic objectives and goals.
4. Reduce operational costs.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supported the 'Technology for Humanity' purpose by providing a smart automated solution, contributing to a broader digital ecosystem of the UAE.

4. Type of value created

- New service/ product
- Speed of delivery
- Quality of services
- Access to services
- Employee satisfaction
- Communications within organisation
- Customer satisfaction
- Process efficiency

5. Impact meter

- Increased the quality of life of citizens / residents
- Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- Reduced water / energy consumption
- Reduced the cost of goods/services (produced / delivered)

6. Development stage

The current development stage of the electronic family book innovation is Scaling Up and Support.

The platform is already operating, with the services finished, lunched and integrated with external parties. Also, family book smart services are integrated with the ICA mobile application and web portal.

For Scalability, ICA runs brainstorming and awareness sessions between the IT and Immigration Departments to find ways to increase the efficiency of the platforms and identify new ideas. Regarding the Support aspect, the IT department is responsible for technical support and Immigration Departments are responsible for business cases and other support.

ICA considers starting the process with Abu Dhabi Department of Economic development to receive the IP Certificate for this innovation, which will happen after the top management approval.

Currently, ICA is trying to integrate with the UAE pass and UAE wallet.

7. Ideation

1. The idea came as a result of the top management directive.
2. Brainstorming and awareness sessions were done internally between the IT Department and Immigration Departments.
3. People involved in the ideation process were selected.

8. Implementation

Implementation process

1. The IT department proposed the solution to the ICA board.
2. Top management provided the innovation team with all the business requirements needed to analyze and design the new solution, in addition to all technical and development tools needed to start the project. They also supported teams in dividing responsibilities, letting them focus on the delivery aspect, allowing for a higher level of quality and professionality.
3. Sponsors provided support in facilitating the approvals of all required process changes and budgeting.
4. The solution planning work started with full support, developing directions and guidance from day one until the end.
5. An integration platform was developed.
6. Mobile Application was developed.
7. Family book services were added to the web platform and mobile application.
8. Platform integration support work started between ICA and external entities. The e-service family book is being introduced to entities through awareness sessions that are conducted physically by visiting different governmental entities by a representative from the ICA.

Tools used

- Oracle ESB
- Mobile Application – Native
- Portals .Net.

9. Participants

Name	Rank	Role
Matar Kharbash	Brigadier General	Project Sponsor
Khalifa bin Quoba'	Brigadier General	Head of Immigration Department
Hamed Al Zaabi	LT Col.	Project Manager
Sultan Al Merri	LT Col.	Strategy Department
Fatima Al Meqbali	-	Smart Services development Manager

10. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
15/03/2018	01/11/2018 and 01/07/2019

11. Impact and results

1. Average time needed to finish transaction reduced from 3 days to a few minutes by using the platform to retrieve the data automatically with auto verifications.
2. Number of human resources needed to complete the transactions reduced from 2 to 1.
3. Average number of paper sheets per book reduced from 29 to 0, eliminating the cost of printing.
4. Facilities cost reduced from 75 AED per book to 0 AED.
5. End to end supervision or insight is now automatically verified.
6. The need for audit was eliminated.
7. Number of service centers visitors for family book services reduced from thousands to none.
8. Number of service's centre visits reduced from 3 visits minimum to none.

12. Other implications

1. Customer satisfaction increased.
2. Customers can access the family book copy online through smart channels at any time.
3. Electronic interconnection reinforcement between all concerned governments entities was achieved.

بلـديـة مـديـنـة أبـوظـبي
ABU DHABI CITY MUNICIPALITY

Portable Computer System

Abu Dhabi City Municipality

1. Description of the innovation

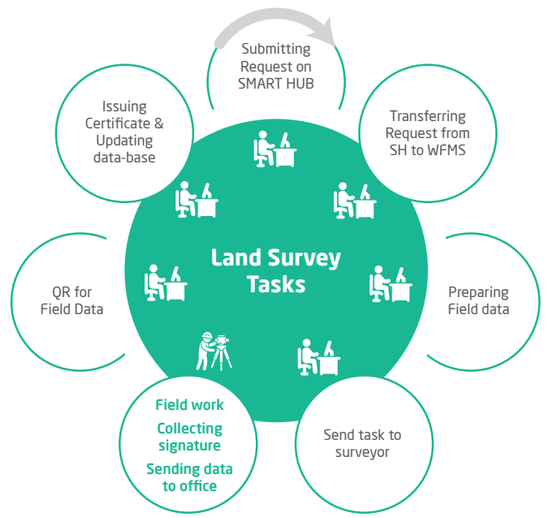
The Portable Computer System is an innovation that enhances daily surveying processes by automating all stages of office and field work activities, which further increases productivity and time efficiency. It also enhances current processes by means of adopting the latest state-of-the-art software and hardware, allowing to perform daily duties more efficiently.

Features and characteristics of the innovation

1. The solution, involves a physical mobile device to be taken into the field as communication tool
2. The main application for field-to-office communication is called ADM-TASKER.
3. The applications linked to all Survey Section internal and external interactions are as follows:
   a. SMART HUB for external customers to submit their request
   b. SWFMS back office application used by the Survey Section staff. The purpose of SWFMS is to organize and manage the exchange of transactions between staff, prepare data to be sent to surveyors and receive field data back from surveyors, archive all data, follow up on the transaction status, compute KPIs. The SWFMS is linked to SMART HUB to transfer all received transaction to SWFMS automatically.
4. Currently, 8 services are available (2019): plot showing, plot setting out - new, plot re-setting out, plot setting out – for study, plot setting out – temporary, Qibla direction, tie beam checking, final survey.

The process

1. QC officer prepares field data according to the type of task, using SWFMS, MAKANI or Oracle data base applications.
2. Task are transferred automatically via APN into surveyor's tablet PC.
3. All required data and information is loaded to surveyor's tablet automatically, including coordinates, previous data, information related to plots, as well as consultant's, contractor's and owner's information name, telephone numbers, plot number, etc.
4. Surveyors perform field work using tablet PC, collecting all required information including the survey data, photos, signature (if required), remarks and comments.
5. The transactions are submitted back to the office using the ADM TASKER, which will transfer those to the SWFMS application immediately. Then, all required data and information becomes available on SWFMS, so that QC officers can start checking reports generated automatically on site and act accordingly.
6. After the QC check and approve, the required certificate is issued. After 10-15 minutes from field work, the certificate is ready.
7. Approved final certificates are sent automatically to the SMART HUB application and customers can download them.
8. All task documents and field data are archived automatically on the Oracle data base.



2. Objectives of the innovation

Main objective

1. The main target for this project is to establish a complete system for transferring different surveying data between the office and the field and vice versa. This includes setting up the surveying devices, PC-based applications, and the communication media.

Other objectives

1. Increase productivity, accuracy, quality of the process while going paper-less
2. Improve the communication of data between the office and field
3. Allow for issuing all types of certificates automatically
4. Generate QA and QC reports automatically and automate the surveying process
5. Issue different types of certificate and field reports immediately after the field work completion.
6. Sign demarcation certificates electronically on site by contractors and consultant engineers, leading to minimizing the number of visits to the Abu Dhabi City Municipality (ADM) office.
7. Better serve the ADM Town Planning Sector Survey Section customers by speeding up their transactions, in order to increase customers satisfaction.
8. Enable surveyors to pre-validate their survey datasets against existing records using a series of business rules that include mathematical and topological tests.
9. Eliminate expensive site revisits by performing quality control on site, reducing the number of steps for issuing different types of Survey Section certificates.
10. Increase field work time and minimize office work time for surveyors.
11. Automate the creation of the fieldwork:
    a. QC & QA database to be used as backup evidence.
    b. "Feature Coding", eliminating the need for separate sketches and providing an option to work without the connection points back at the office.
12. Enable the system to accept the submission of observation data that is subsequently adjusted through the least squares method to produce accurate coordinates.
13. Eliminate the need for surveyors to do any office editing or redrawing, or to produce a hardcopy survey plan.
14. Enable head-office management, office teams and field crews to securely share information and collaborate on all aspects regarding daily transactions remotely.
15. Allow for urgent tasks to be done faster without the need for surveyors to return to the office for collecting data.

3. Link to the National Advanced Innovation Strategy (NAIS)

Support the connectivity and integration of smart devices into standard work activities under the 'Technology for Humanity' purpose

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Reduced water / energy consumption
- ✓ Increased the number of units of a good/service produced / delivered

6. Budget

1,595,000 AED

7. Development stage

The innovation is currently in the scaleup and support phase.

The system is fully implemented on daily survey works by all (12) surveyors. The average number of transactions completed daily ranges between 120 to 150 per day.

Daily operations require minimum support from the IT and training teams.

8. Ideation

As per the Abu Dhabi City Municipality strategy, all municipality services should be automated and transformed into digital format. Therefore this innovation was framed within this strategic objective.

Previously, the ADM faced the following issues:

1. The processes of receiving demarcation certificates to commence building construction and conducting transactions related to the final survey were not satisfactory in terms of delivery time and reliability of the results.
2. Too many resources were involved producing inadequate outputs.

Ideation process

1. Considering the above, the Spatial Data Division (SDD) director has appointed a team of experts from the Survey Section to analyse and prepare the optimal solution to improve the services.
2. Additionally, experts from IT and Spatial Data Division have been invited to participate in the project ideation
3. Meetings during which various ideas were exchanged. Everyone agreed what there was room for improvement

Based on the output from ideation meetings, preliminary requirements and scope of work were defined. At that stage it was decided that "The main aim of the project will be to automate the process of issuing plot demarcation and other certificates, speed up field work, increase the number of transactions and reduce manual work to minimize human errors. Applied solution should use the latest technology in hardware, software and databases management, exchanging data between the field and the office, using online GSM technology, and considering the security of sensitive data"

9. Acceleration

1. The next step was to carry out a feasibility study, including the identification of possible risks and challenges, such as:
   a. Reliability of survey results dependence on the quality of input data
   b. High level of data security in ADM may have impact on the efficiency of the system
   c. Integration with existing ADM systems and applications
2. To address those risks, the following measure were taken:
   a. A parallel in-house project was completed to improve the structure and accuracy of the source data
   b. Secured VPN connection was suggested for the field-to-office data exchange (which later was replaced by APN which is found it is more security and economical)
   c. It was agreed that selected contractors should be able to integrate their solutions with existing ADM systems
3. The Spatial Data Division (SDD) Director has requested to start the tendering process and form a committee evaluate the offers and select of the best one.
4. Teams of experts from the Survey Section prepared the terms of reference.
5. As part of the terms of reference preparation, the team of experts coordinated with the ADM IT team to discuss standard requirements for server specification, and to select the best and sufficiently powerful telecommunication media for sending and receiving data between the office and field.
6. Also, meetings with internal programmers and system analysts were arranged to discuss project planning and requirements to be included based on the project terms of reference.
7. Budget was allocated by the Financial Department.
8. An open tender was announced in various media.
9. Technical offers were evaluated by the members of the committee and recommendations were send to the Procurement Department. Considering the financial offer, the best company was awarded.

The awarded company signed the contract, leading to the start of the implementation phase.

10. Implementation

Implementation Process

1. Implantation phase started with a kick off meeting. The contractor presented their team and a plan for the project realization, including the schedule of the project and the risk assessment & mitigation plan.
2. Based on the project requirements, the contractor presented the design and the main features of the software.
3. After the approval of the above, the contractor started the development of the first software prototype.
4. Then survey team started tests and prepared the list with comments. All checks were performed

5. On a test data base. After several iterations and exchanging feedback, the first stage version of software was released. Testing moved to the staging database environment.
6. At the same time, the IT started preparing for hardware (e.g. servers, switchers) to be delivered by the contractor for integration with the ADM infrastructure. Also, administrative processes with the Internet Service Provider (Etisalat) started.
7. In parallel, the SDD team prepared the requirements for integration of the new system, the ADM Tasker, with current SWFMS, PDMS, MAKANI and other applications to be used by the contractor.
8. The production version of the software was released only after the following actions were completed:
    a. All components were properly tested
    b. Input data for surveying was cleaned and corrected
    c. Servers dedicated for the task was connected with the ADM infrastructure
    d. APN communication was tested for efficiency and security of the data
    e. Integration with the current systems, SWFMS and SMART HUB was achieved
    f. Survey equipment, GNSS receivers, controllers and tablets were configured with APN, and the software was installed.
9. The last step was to train the surveyors to use the new system. Before the official release of the Product, the training was provided only for 2-3 surveyors. This helped to use the final tests to give more valuable product feedback for final improvements.
10. The product was finally ready for release, and training was given to the remaining 9 surveyors. As the system was completely new, it took approximately 1 week for the surveyors to become familiar with it.
11. In 2019, the system was integrated with SMART HUB, where customers can make transactions from home, making the platform more efficient.

Future plans

AD is practicing knowledge sharing, in conversation with Al Ain and Al Dhafra Municipalities showcasing their experience and knowledge.

11. Participants

The following teams participated in the project:

- ADM IT Team
- Spatial Data Division, Programmers and System analyst
- Survey Section

Main Stakeholders:

- Department of Municipalities and Transport
- Al Ain Municipality
- Al Dhafra Municipality

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
2017	December 2018

13. Impact and results (to date)

The system is in operation for one year and it has proven the following:

1. Number of transactions done by single surveyor has doubled
2. Total number of transactions increase from 18,308 in 2017 (or 19,146 in 2018) to 22,100 in 2019
3. Number of transactions lasting over 2 days decrease from 12,084 in 2018 to 2084 in 2019
4. Time of completion of transactions was reduced to one day
5. Quality of data increased significantly by reducing human errors in typing and generation of automated reports with 100% transparency
6. Various certificates can be issued within an hour from completion of a field survey
7. More tasks are sent remotely to surveyors on site during working hours
8. Reduced paper usage to 0%
9. Full automation of the survey work process from the request received to the final output
10. Increased field working time and minimized office work time for surveyors
11. Availability of the process at any time

دائـرة التـخطيط العـمراني والبلـديات
DEPARTMENT OF URBAN PLANNING AND MUNICIPALITIES

Chatbot for Tenancy Contract services

Al Ain Municipality

1. Description of the innovation

The Chatbot (named Suhail) is based on an AI platform that contains all data related to the service of registration of rental contracts and general information, which provides customers with answers to any questions in an integrated way.

The response time is within 2 seconds. The virtual agent can handle multiple user queries at the same time with no time lag. For example, the bot can collect authorization remotely by SMS and update user data through integration with federal authorities.

The Chatbot implementation is focused on providing the below mentioned features:

1. Information about Al Ain Municipality
2. Queries related to Tenancy Contract
3. Information about the Tenancy Contracts registration service
4. Decisions, circulars and memorandums related to the Tenancy Contracts registration service
5. FAQ related to the Tenancy Contracts registration service
6. User Guide; how to use the Tenancy Contracts registration service
7. Contract Inquiries (Contract Status, Contract Value, Tenant information, etc...)
8. Receiving application for the Tenancy Contracts registration service
9. Automating the process of user authentication, contract renewal and modification.

It can understand customer inquiries and questions as well as learn from each transaction using Natural Language Processing and Machine Learning. The Chatbot is able to access information through multiple sources, finalize transactions with customers, and escalate complex queries to customer service agents.

The Chatbot can be made available across the following channels:

Website	Facebook Messenger
Mobile app	WhatsApp for Business

2. Objectives of the project

1. The main objective is to design an intelligent technology platform to decrease effort, cost and time needed to manage a Tenancy Contract. Therefore, automation and AI tools were used. A roadmap was developed to migrate the process from the walk-in service to the AI service.
2. Build a comprehensive solution that is able to cater for customers across the whole emirate of Abu Dhabi, Al Ain city and Al Dhafra.

Challenges

1. Average time needed to apply for a Tenancy Contract used to take on average 3-5 days
2. Customers needed to travel to customer service centres (which for some are in other cities)
3. The average waiting time at each customer service centre was 120min
4. A new customer needed to register their profile in 3 cities and wait for around 30min at the counter, in addition to 4 hours for travelling in-between cities and the need to come for a second time to collect registration papers.
5. The need to visit external partners in the process, e.g. two visits to the department of economics in order to obtain a trade license after approving the tenancy contact of the facility. The same is related to the electricity and water supply.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supported the "Technology for Humanity" purpose by adopting AI and digital technology to ensure ease of access to services.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Customer satisfaction

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Reduced water / energy consumption
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

100,000 AED

7. Development stage

The project is currently under implementation.

8. Ideation

The source of the idea

Following the UAE national AI strategy and with the aim to execute the directions of H.H.E. Sheikh Mohamed bin Zayed AlNayhan the crown prince of AbuDhabi, the Al Ain government wanted to deliver very unique end results, closing all the identified gaps and issues and delivering added value to the customers (e.g. reduce interaction with external entities).

The process of ideation

The idea emerged as a product of the Al Ain Municipality AI Lab.

Tools used and people involved in the ideation process

As part of the Al Ain Municipality AI Lab, the team of the IT department collaborated with service owners and business units across different service sectors of the Municipality in interactive workshops to analyze pain areas in their provided services.
Brainstorming sessions were used afterwards to identify opportunities for improvement using AI tools.

Results achieved

A comprehensive list was built with municipal services classified by their readiness to be converted to intelligent services.

9. Acceleration

A pilot was implemented in the early stage as a proof of concept and showcased at GITEX 2018 as one of Al Ain municipality's intelligent services. For that pilot the Al Ain Municipality collaborated with BlueLogic, a prominent company in providing AI leading solutions.

Al Ain Municipality received great feedback on the pilot with many entities showing interest in the outcome of the final Chatbot solution.

10. Implementation

Implementation phases

The initial phase focused on re-engineering the tenancy management process by using an integration tool in order to avoid any manual data entry or delays in accessing remote data. Different ways to apply for the service were introduced, particularly for the people of determination and senior citizens, who could not complete the full old process.

The second phase focused on the transition of the service into a more intelligent AI platform. The chatbot was designed to provide the service both in Arabic and English. It helped attract new types of customers to the service, which led to the increase of income and the closure of the identified gaps (e.g. random house renting or unauthorized renting).

In order to reduce the re-implementation effort and cost pressure on the government budget, 3 cities (Al Ain city municipality, Abu Dhabi city municipality, Al Dhafra municipality) were covered at the same time. 3 main external partners and 20 partial beneficial partners were also covered.

Implementation process steps

Implementation of the Chatbot involved the following activities:

1. Requirement Gathering and Research
2. Chatbot User Journey Definition
3. Avatar and Image Creation
4. Dialogue Management (Small Talks, FAQs)
5. Service work flows (Renew, modify Contracts)
6. Dialogue Flow Mapping
7. Bot Failure Mechanism
8. API Integration and Testing
9. SMS Gateway Integration
10. Payment Gateway Integration
11. Integration with Flows

11. Participants

- Al Ain Municipality Business units
- Al Ain Municipality Technical team
- BlueLogic
- Customers

12. Start and end date

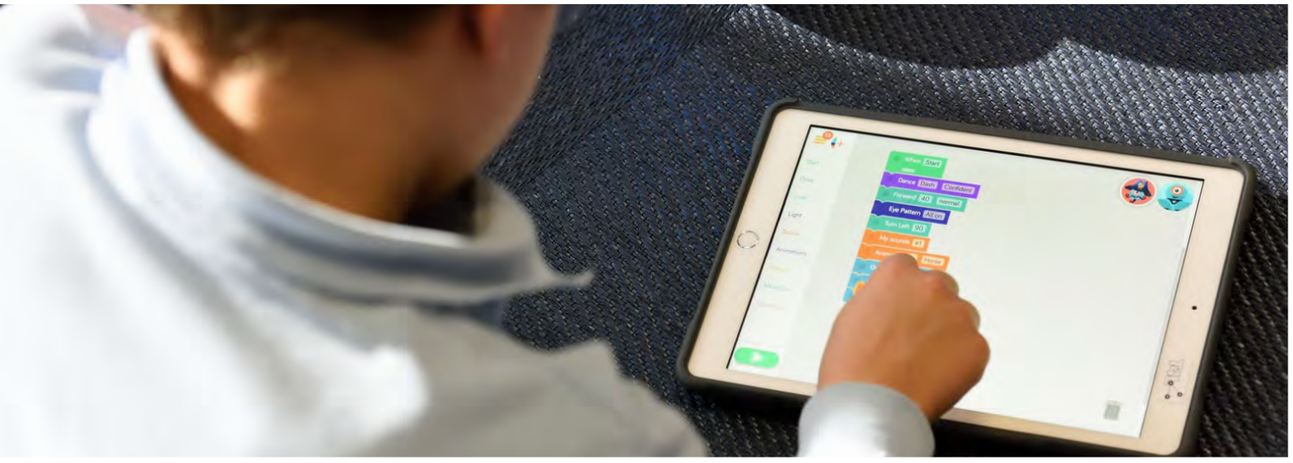
Start date (from the ideation phase)	End date (to the implementation phase)
Feb 2018	Ongoing

13. Impact and results (expected)

1. Increase the service availability time:
   a. From 8/5 hours to 22/7 hours
2. Reduce the time of service completion on-line:
   a. From 24 hours to less than 1 minute
3. Also:
   a. Customers can chat with the "Suhail" chatbot to be guided easily, with week-round access to all commonly used communication channels
   b. Customers can print their tenancy contract remotely or use a digital copy
   c. Zero uploaded documents
   d. Auto approval process taking less than 5minutes
   e. Creating new AI duties for the retired customer service agents after implementing the idea
   f. Participating in achieving the UAE AI strategy KPIs
   g. Enhancing other external entities process and services by increasing digital transactions

My Rights Game App

Community Development Authority



1. Description of the innovation

My Rights game, that targets children 4-12 years old and educational institutions. It is based on international human rights standards for children and laws of treatment of children in the UAE, focusing on three aspects: right for education, right for health, and right for security, available both in English and in Arabic. It is direct and simple, which makes it attractive to children.

The game is a mobile application available on iOS and Android platforms. The game is a points-based, allowing players to explore more by earning more points.

Context:

In order to keep up with the requirements and interests of the new generation in technology, CDA tried to diversify its tools and channels of communication with the community to spread the idea of children's rights. They directed children to use the tool that match their preferred learning style and achieves the government's vision for smart education.

Children currently spend a lot of time on smart devices, which are more influential in building their personalities and enhancing their knowledge in comparison to traditional learning methods. Thus, it becomes easier to deliver CDA messages by providing good content for a child, cultivating the basic values of human rights and presenting them in a way that is entertaining.

The game is displayed both in public and private schools, and can be downloaded in Arabic and English for free. It contains many rights for children including "the right to get protection from all kinds of harms and abuses physically or psychologically", "the right to receive education", and "the right to healthcare". It is designed to allow a child to learn the rights gradually as they pass different stages of the game.

2. Objectives of the project

Main Objective

To promote and disseminate awareness of children's right in a fun and enjoyable way matching the UAE Vision.

Other Objectives

1. Promoting the adoption of the game in schools as a recreational teaching tool to help children understand the concept of human rights.
2. Protecting children from abuse.
3. Encouraging children to be educated.
4. Taking care of children's mental and physical health.
5. Educating parents and guardians about children's right.
6. Keeping up with the government's vision in bringing technology into our work in spreading awareness.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Support the preventative health and healthy lifestyles by increasing children awareness about their rights to healthcare and to get protection from all kinds of harms and abuses physically and psychologically under the 'Wellbeing' purpose
2. Support the 'Education and Future Skills' purpose by educating children and creating awareness about their rights, including the right to receive education.

4. Type of value created

- New service/ product
- Speed of delivery
- Access to services
- Customer satisfaction
- Process efficiency

5. Impact meter

- Increased the quality of life of citizens / residents
- Increased the number of units of a good/service produced / delivered
- Reduced the cost of goods/services (produced / delivered)

6. Budget

52,500 AED

7. Development stage

The innovation is in its implementation phase.

8. Ideation

The CDA team (Mrs. Maitha Alshamsi, Ayesha Almarri, Wahiba Almulla, with a former employee, Mrs. Shamma Aldabal) gathered in an internal brainstorming session and came up with the "My Rights CDA" application idea for children and their guardians, with the aim of reaching children's mind in a very simple and direct way.

There were no financial benefits implied but on the moral level, CDA achieved the goal of raising awareness about children's rights, hoping to continue contributing in an ambition to raise a generation that is aware of their rights.

9. Acceleration

As all projects in the Community Development Authority, the application game had to go through an approvals line:

First, the section director had to approve of the idea. Then it had to be shown to the CEO of the sector (in this case, the Human Rights sector) for approval, after which it was raised to the Administrative Control Department. After receiving the approval, the project team started to build the game step by step.

10. Implementation

After getting the approval from the CEO of Human Rights, Mrs. Maitha Al Shamsi, the project team searched for a local company to implement the CDA vision to encourage small local businesses. After receiving many tenders, "After Work Company" was shortlisted to work on developing the application.

After the shortlisting, meetings with the chosen app developer were held to explain the scope of work and detailed content, making sure that it matches the international human rights standards for children and the laws of treatment of children in the UAE. Many reiterations were completed until the final version was developed.

11. Participants

1. Community Development Authority, Human Rights Sector

2. After Work Games

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
29 Oct 2014	End date= 20 Nov 2016 (Launched campaign during the internarial child's day at the City Walk)

13. Impact and results

1. Raised awareness of child rights among children (according to a dedicated survey)
2. 4541 downloads (as of 30 Sep 2019).

14. Other implications

Participating in events related to children such as:

1. Children's smart game first lunched in 20th Nov 2016 (international children rights day), in City walk, and as a result leading to 657 downloads.
2. Participation with the Human Rights Department at the Ministry of Interior in the Emirate of Abu Dhabi International Human Rights Day exhibition on 13 Dec 2016.
3. Participation with Al-Manal nursery at the Mohammed Bin Rashid Housing Establishment and Al-Bara'a Kindergarten in 14 Dec 2016, educating 20.
4. My Rights CDA smart game campaign had 5 Healthcare sponsoring companies related to healthcare rights, from February until March 2017, as a result educating 20 schools, 60 children in Latifa's Hospital, and showcasing at the Zayed University exhibition.
5. Back to school in Dubai Mall during Dubai Summer Surprises in 13-26 Aug 2017, as a result educating 1551.
6. My Rights workshop for 40 children in the Festival City in cooperation with the Culture and Art Authority in March 2018.
7. Hello School in government and private schools.
8. Participation in the "Schools and Child Welfare Exhibition" at the Dubai Trade Center on 1- 12 January 2018, educating 200 children.
9. Participation with the General Department of Human Rights, Dubai Police, on the occasion of International Children's Day in the accompanying exhibition "Voice of Childhood" on 23 November, 2018, educating 250 children.
10. Training 28 "Know Your Rights Program" coaches in both government and private schools on the game.
11. The exhibition accompanying "Know your rights" First Forum in 2018, educating 145.
12. The exhibition accompanying "Know your rights" First Forum in 2019, educating 150.
13. Number of those benefiting from children's right programs in 2018 = 10735.
14. Number of those benefiting from children's right programs in 2019 = 11835.

مؤسسة زايد العليا لأصحاب الهمم
Zayed Higher Organization for People of Determination

Smart Rehab Lab (Robotic Therapy Laboratory)

Zayed Higher Organization for People of Determination (ZHO)

1. Description of the innovation

General description

The Smart Rehab Lab is the first integrated project in the Middle East where robotic devices are taking the responsibility for providing most of the rehabilitation services needed by people of determination. The lab aims to provide intensive physiotherapy and occupational therapy services to the maximum number of beneficiaries in shorter time and with less effort, with help of high tech, AI and robots. It serves around 100 clients from different age groups, and the numbers are expected to double in 2020 to reach at least 200 clients after reaching an MoU with the UAE armed forces.

The patient is evaluated and treated with the help of a smart therapeutic programs and automated limbs that mimic the patient's limbs (arms and legs) in all joints and movements. Each movement is tracked by wearables that synchronise with the computing systems that use AI to adjust the training in real time based on responsiveness of the patients. The device is also able to initiate support when necessary.

Advantages

- Allowing the patients to perform only the required exercises in a correct and interactive manner, with the support of stimulating VR games.
- Allowing for longer training sessions with a high number of repetitions and frequency, which play a crucial role in promoting sensorimotor learning in patients with disorders of the central nervous system.
- Maintaining a consistent movement pattern.

Robots used in the laboratory

The smart rehab lab Contains 11 different devices used in rehabilitation, which are:

1 Lokomat device: for gait training and lower limbs rehabilitation.

2 Armeo devices: for single arm rehabilitation: 1 Armeo for adult and 1 for pediatric usage.

1 Diego device: for rehabilitation of both arms simultaneously.

1 Amadeo device: for fingers and fine motor training.

1 Myro device: for grasping, and cognitive training.

1 Gloreha device (Robotic Gloves): for hand rehabilitation and ADL training.

4 Thera trainer devices: for providing active, resistive and passive ROM exercises.

2. Objectives of the project

Direct objectives

1. Increase the quality and effectiveness of the treatment provided to admitted people of determination at the lowest cost.
2. Reduce the number of people in queues for therapies and increase the number of sessions provided.
3. Improve the level of performance and capabilities of the beneficiary patients.
4. Provide a patient-stimulating environment that encourages movement and responsiveness while receiving the treatment session.
5. Be the pioneers in the field of rehabilitation and ensure the best practices are followed.
6. For ZHO to leave its mark, prove its presence and participate in building the future of good quality technology globally.

Indirect objectives

1. Monitor, evaluate and reassess easily and accurately the improvement of patients, using an assessment program contained in all devices.
2. Archive information: increase the ease of referring to each patient's file, containing the type of treatment they received and the results of each session over years.
3. Ensure the quality of life for children even if there is no significant development in their condition.
4. Minimize side effects on therapists after years of hard work.
5. Allow more time for therapists to view different cases and be creative and innovative.
6. Reduce paper usage, preserving the environment by starting an electronic system.
7. Address the strategic plan for adopting innovation applications
8. Reducing repetitive tasks during therapeutic sessions as well as ergonomic hazards for physiotherapists caused by manual physical efforts during the sessions.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Supported the 'Wellbeing' purpose by providing health services using advanced technologies and treatment methodologies.
2. Supported the 'Technology for Humanity' purpose by taking advantage of the robotic technologies, enhanced with AI and data analytics.

4. Type of value created

- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Reduced water / energy consumption
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

9,691,000 AED

7. Development stage

The innovation is in the scaleup stage. ZHO are aiming to conduct a research, having the experience over time, the tools, the resources and confirmed stakeholders participation. In Jan 2020, the first meeting was conducted with the research committee from the Fatima College for Health Science to activate the MoU benefits. The literature review has already been done by the team as the first step of the research proposal.

Additionally, there are plans for establishing another Robotic Lab in Al Ain.

8. Ideation

General description

The source of the idea came from multiple visits to international medical & rehabilitation equipment exhibitions inside and outside the UAE in order to be aware of the latest innovations and best practices followed around the world. In 2015, there was a trip to Rehacare in Germany to visit the biggest specialized show for rehabilitation equipment in the world. This is where the ZHO team became familiar with the robotic technology in rehabilitation.

After 2 months, the team visited another provider in Switzerland who already used the equipment for medical rehabilitation. This was done to confirm that the technology has the potential to become the future of the rehabilitation.

At the same time, the team started looking to fully renovate the therapy department in order to tackle all existing challenges. Moreover, it was important to have an improvement in the level of services provided and to add new effective procedures in order to bring more benefit to the existing patients and attract the new ones. Several meetings took place between the project team and the therapy department to discuss the challenges, the requirements of the department and the suitability of the chosen technologies with the cases of our patients. For each device, the percentage of patients who could benefit from it was estimated. The therapist also made visits to local shows that displayed some of the equipment that was chosen in the initial equipment proposal.

The innovative idea that was pursued after visiting the exhibitions rehabilitation providers around the world was to have the full solution in one lab. The ZHO team collected 11 devices that work to provide therapy for different parts of the body from lower to upper limbs in the most effective and motivating way.

Before starting the implementation of the project, the ZHO team conducted a research, which was registered as an intellectual property with the Ministry of Economy.

9. Acceleration

Activities

1. Assessing the patients in each of the 11 devises in order to check the categories of technology application. From that activity, certain criteria were created according to the therapists' input and feedback based on their initial assessment.
2. Continuous meetings were held, during which 3 decisions were made to accelerate the operation of this innovation project:
    a. First, assign each therapist to handle a specific device to study, focusing on the device and the expected result.
    b. Secondly, assign trainee therapist patients to assist the team of therapy in morning shifts only to control the high flow of appointments.
    c. The devices were used by therapists for all cases and a specialized study was done for some of them, including paraplegia, based on positive and successful experiences with a number of cases when using the "Armio" and "Diego" devices.

Impact

1. Better understanding of each device and how the features will assist the users to run the sessions smoothly with less effort.
2. Better selection of types of cases that will achieve promising result in 6 months, excluding such complex cases for later stages.
3. New tool for selecting criteria of applicable cases for the robotic lab experience and trials
4. Improvement in reports of the 99 cases, which used to be variable throughout their history, partially due to commitment to the treatment plans.
5. On 10 September 2018, the head of therapy was invited as a speaker to share the experience of ZHO in practicing the innovation approach in therapy at the Conference on Innovations in Rehabilitation Practice that was held by the Thumbay group.

10. Implementation

Implementation process

1. After Preparing a comprehensive study about the project, with all the required details and the benchmark to receive the approvals needed to implement the project, translated to Arabic, the project team made a presentation to the higher management, showing how much benefit ZHO will get, including the advantages that will achieved and the challenges that will be overcome.
2. The team prepared the tender scope of work and the specification file with the equipment required.
3. A tender was released to find equipment providers. At checking the proposed offers, new equipment was discovered that the team was not aware of.
4. The team of different specialities evaluated the proposed offers and made a technical evaluation.
5. The purchasing department did the financial evaluation according to the technical approvals, and the team start waiting to receive the devices, which were coming from four different manufacturers in different countries (Switzerland, Austria, Germany and Italy).
6. Meanwhile, the construction work was taking place in the area where the lab was to be implemented.
7. The project was given special attention from various departments and at the enterprise level until it appeared in its final form. The project implementation required involving employees from many departments: engineering office, therapy, IT and procurement, - to make sure that the project is on the right track and to avoid unexpected circumstances. All the accomplishments and outcomes monitored above were completed according to the specified timeline. The project manager was involved in the completion of each stage and the measurement of outputs himself.
8. This was followed by a visit to the Global Robotic Therapy Conference held in the UK, London, in July 2017, during the Rehab Week London, to see the latest innovations in the world, to benefit from the experiences and expertise of similar practices globally, and to make sure the team is moving in the right direction.

9. Since the devices are modern and unique, specialized training was one of the main pillars of the project, which was one of the agreement terms specified in the suppliers' contracts.
10. After received training on all devices from certified trainers from the manufacturers of the devices, the trained therapists were approved as users and certified trainers for these devices. Then, the project team worked on a training plan for the laboratory-based therapists and recipient of training therapists to train their colleagues in order to transfer the knowledge and expertise and ensure the sustainability of the laboratory work.
11. The project manager prepared a review report of what was applied in five steps.
    a. The first one was to evaluate the project performance based on his commitment to implementing the project, following the specified time frame and the budget allocated to it, and the degree of commitment to the levels of quality and human resource productivity and other resources.
    b. The second step was to indicate the extent of the project's adherence to the processes to be followed in managing the work content, managing the program time frame, project cost, quality, resources, communication, risks and supplies, which constitute the requirements for managing any project.
    c. The third step was to determine the achievements of the project and the benefits for the institution.
    d. The fourth step was to clarify the errors and omissions that occurred during the implementation of the project, the impact that resulted from them and the extent of the damage caused to the institution.
    e. The last step was to summarise the lessons learnt to be followed in future projects with the aim of achieving better results and reducing the chances of making mistakes.
12. The team has prepared an outline to assess the quality of the outcomes. Accordingly, corrective measures were put in place for the outcomes that were within the scheme.

11. Participants

All relevant internal and external participants and stakeholder were identified and placed within two main categories: the strategic and supportive participants.

Strategic participants

1. The higher management of the institution, which is the project's funding body and whose expectations are to raise customer satisfaction, improve the quality of rehab services, utilize financial resources effectively, and achieve the priorities and the goals of the strategic plan of ZHO.
2. People of determination and their guardians who are the beneficiaries of the service, and whose expectations are to improve in their abilities and obtain more sessions and higher quality treatment.
3. The project team. Their expectations were to complete the project as planned in terms of time, cost and quality of work, and to obtain a high level of satisfaction of the beneficiaries.
4. The Health Care Department, ZHO, which is the operator of the project, and their expectations are to raise the capacity of the department in terms of service provision, improve the quality of the services provided, use technology in reporting and raise customer satisfaction.

Supportive participants

1. Information Technology Department, ZHO, which is a technical supporter for the project, and whose expectations are to provide the necessary technical support to operate the devices.
2. Financial and administrative affairs, which is a body that provides support services. Their expectation was to obtain the required equipment with the highest standards and at the best prices.
3. The medical suppliers who are looking for the success of the project, which will be a strong marketing point for them.
4. Colleges and universities in Abu Dhabi and Ajman, who are interested to study the impact of the robotic assisted rehab services on POD in UAE. The ZHO team was invited by them to many conferences in order to share the success story. After, their patients were trained in the smart lab, and, because of the good result achieved with the patients, they are considering to include robotic assisted rehabilitation as a topic in the physiotherapy curriculum.
5. Public and private healthcare providers who are interested to benefit from the technology
6. UAE armed forces and some private rehab centers in Abu Dhabi who have signed a MOU with ZHO to send the their patients to get the treatment in the smart lab.

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
2015	2017

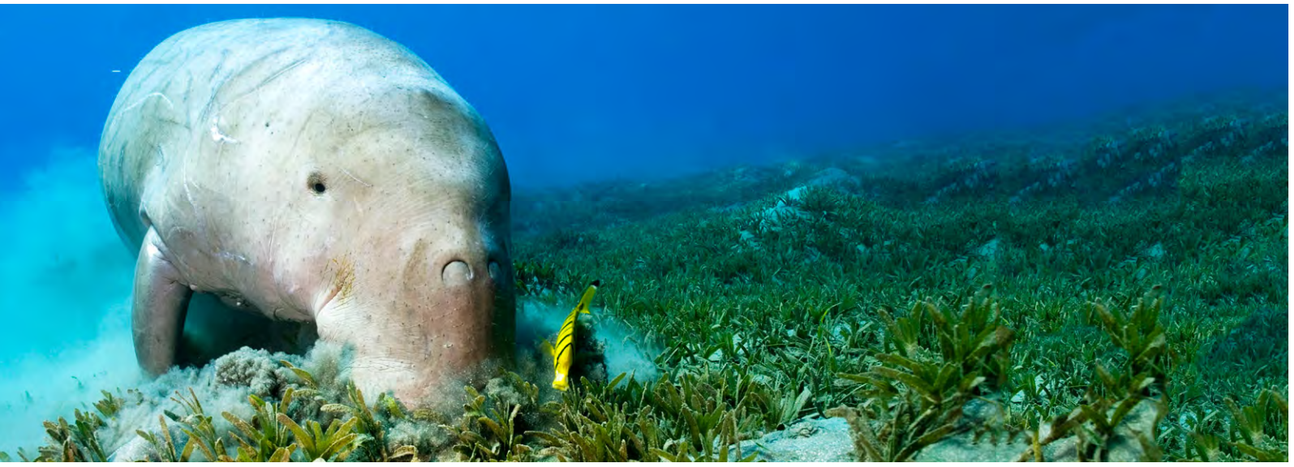
13. Impact and results

1. Contributed to reducing paper consumption to 89% of the previous consumption, which used to consume 3360 papers for the total number of beneficiaries in a year.
2. The number of beneficiaries at the department level increased. The number of POD (people of determniation) before implementing the project we were able to cover 270 cases but after implementation the number increased to approximately 450.
3. Improved the quality of patients' reports, attendance and progress documentation, adding an option to create those electronically and ensuring continuity with old data.
4. Increased safety for therapists.
5. Reduced the number of rooms needed from 3 to 1.

6. Provided an opportunity to reduce the number of therapists to 4 for working with 11 patients in one session in the robotic lab.
7. Allowed to monitor its results for beneficiaries.
8. Increased the responsiveness and engagement of the patients.
9. The innovation solution increases the morale of employees, reduces ergonomic pain and leads to less sick leaves.
10. In the robotic lab, 4 therapists with 11 devices are running 77 sessions a day, as opposed to 4 therapists would normality run 28 sessions a day (7 sessions each).
11. From the quality perspective, Robotic devices have impressive performance systems with numeric outcome measurement, smart detection of the cases improvements, positive feedback from parents of patients that increase the quality of life in short time.
12. The total saving in 5 years compared to the status quo is 5,832,200 AED (expected).
13. Certifying Zayed Foundation therapists as trainers with one of the manufacturers, which is Hocoma, in order to train therapists in the Arab Gulf region and the Middle East on the use of leukomat devices and Armio.
14. Agreement to launch a new annual scientific conference in partnership between the Foundation and the Swiss company Hokoma in November 2020, that will focus on discussing the use of technology and robotics in the rehabilitation of people of determination.
15. Cooperating with healthcare departments abroad to provide rehabilitation services to pediatric and elderly patients who need such kind of treatment services.

Dugong and Seagrass Research Toolkit

Environment Agency - Abu Dhabi



1. Description of the innovation

The Dugong and Seagrass Research Toolkit (hereafter "the toolkit") is an initiative by the Environmental Agency – Abu Dhabi (EAD), TOTAL, Total Abu Al Bukhoosh and the UNEP/CMS Dugong MoU that provides an easily accessible online decision-making tool to guide the selection of specific dugong and seagrass research tools or techniques to adopt in specific circumstances.

The toolkit is available to members of universities, research institutes, governmental and non-governmental organizations with mandates for coastal and marine research and conservation. It supports researchers in the process of setting and refining their objectives, while considering overall conservation management goals and budgetary restraints, as well as factors such as time scale, spatial scale, technical capacity and specific challenges on the ground. In addition to collecting information on dugongs and seagrass, the toolkit provides tools and techniques to understand the threats and human community factors that affect dugong and seagrass conservation.

The interactive approach of the toolkit makes it extremely efficient in providing the right kind of guidance, saving researchers, conservation practitioners and marine management agencies time and resources. It is designed to be easily accessible to researchers and practitioners working in developing countries with limited access to scientific expertise, serving as an efficient and cost-effective method to ensure consistent, comparable and standardized data sets across the dugong range.

In order to use the tool, a user has to open the designated website, press 'Launch Toolkit' and follow a simple process tree, on the basis of which the toolkit provides recommendations, respectively. The final product from the tool is a 2-pages long report, including the summary of research papers and preliminary analysis, which can be saved in the PDF format.

2. Objectives of the project

Major objective

The overall direct objective of the toolkit is to provide an easily accessible online decision-making tool that supports the selection of the most appropriate research methodologies for the studies of dugong, seagrass and associated human communities.

Indirect objectives

1. To provide a decision support tool for research into dugong, seagrass and associated human communities.
2. To provide a standardized method for assessing dugong populations and seagrass distribution and status.
3. To provide a dynamic toolkit for marine natural resource managers, decision makers (both government and NGOs) and researchers.
4. To assist donor organizations to assess funding proposals.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supports the 'Advanced Science' pillar by providing a new tool for conducting accelerated research across borders, eliminating inefficiencies in the research process and providing suggestions for taking optimal research directions.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services

5. Impact meter

- ✓ Enhanced access to finance for citizens / residents or businesses
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

235,000 AED

7. Development stage

Current stage

The innovation is in the Scale Up phase. The toolkit is available for use for dugongs and seagrass across all 46 countries that are range states of the UNEP/CMS Dugong MoU.

Next steps

The toolkit is intended to be a living resource, to be updated as new research methods are developed or existing ones further advanced. Updated advances yet to be included (pending funding being available) include the Dugong Detector (AI detection of dugongs and other marine megafauna from video drone footage) and guidance on small-drone survey methodology. Further functionalities, including the ability to print or save a selected decision-tree stream, would enhance the toolkit's accessibility to those with unreliable or limited internet access.

In addition, broader promotion of the toolkit to improve its exposure is needed to promote its uptake in the international research and conservation community. Further potential was identified in adapting it to other marine species such as manatees or sea turtles, as well as other coastal habitats such as mangroves and coral reefs.

8. Ideation

The project was jointly conceived in 2015 as part of the EAD and CMS Dugong MoU and its team of technical advisors, with funds secured from TOTAL under EAD. The motivation for the innovation came from the recognition that clear guidance was needed for scientists and conservation practitioners, especially those in developing countries with limited resources and ability to collaborate with technical experts, to undertake robust research and science-based conservation measures.

The initial idea was to develop a book of best practices (physical and digital) that could be used to provide information about the topic and to select the best approach when conducting research. The platform format came from the idea of guiding the users to analyse and reach the relevant questions.

The potential of an electronic toolkit to address this need was identified as an innovative approach to support research and conservation of dugongs and the local communities which rely on seagrass habitats. It has been developed to be accessible for all users, including those with limited technical experience and/or knowledge in dugong and seagrass research and those who are not native English speakers.

TOTAL has provided strong and continued support to the team, which has been an important enabler of the project.

9. Acceleration

Between 2015-2017 (the toolkit design) and 2017-2019 (the toolkit development), the project was accelerated through a series of pre-planning workshops, testing and trials through an existing dugong and seagrass conservation project being implemented in eight countries, as well as projects being implemented separately by the technical advisors.

10. Implementation

Between 2016-2017, a dedicated project manager based with EAD coordinated the development of the toolkit by liaising with the UNEP/CMS Dugong MoU and technical advisors from the Dugong MoU Technical Group. The toolkit's structure and integration were developed during two face-to-face workshops and a series of remote workshops and direct meetings with the technical advisors, a web developer and contracted graphic artists. Specific content for each component was produced by the technical advisors, who collaborated with each other as necessary. The final web-design was completed by the project manager, EAD, UNEP/CMS Dugong MoU Secretariat and the web developer.

The toolkit was launched at the Third Meeting of Signatories to the UNEP/CMS Dugong MoU in March 2017 by His Excellency Dr Thani Ahmad Al Zeyoudi, UAE Minister of Climate Change and Environment, and Her Excellency Razan Khalifa Al Mubarak, Secretary-General of EAD. A documentary about the toolkit was also produced to provide a useful overview of how it is making a significant contribution to dugong and seagrass conservation.

11. Participants

1. Environment Agency Abu Dhabi
2. UNEP-CMS (Convention of Migratory Species)/Dugong MOU Secretariat
3. TOTAL, TOTAL-ABK
4. Ministry of Climate Change and Environment of UAE
5. Mohammed in Zayed Species Conservation Fund (GEF Funding Program)
6. Practicing researchers, conservationists and competent government authorities and decision-makers in the 46 Dugong MOU Range States

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
2015	March 2017

13. Impact and results

Main impact

The toolkit has made considerable progress towards improving global understanding of the overall status of dugongs and seagrass ecosystems across the Indo-Pacific region by addressing inconsistencies in approaches to research, monitoring, data collection and reporting (which have resulted from the incompatibility of datasets across the range states), as well as raising awareness of the importance of dugong and seagrass research with decision makers.

The toolkit specifically addresses the lack of standardized methods and standard operating procedures for assessing trends in dugong populations and seagrass distribution and status; differences in protocols for investigations of dugong mortality and necropsy studies; low priority given to studies of dugong and seagrass ecosystems and their conservation; and lack of clarity in research questions and consequent wasted effort in using inappropriate techniques and tools.

Other impact

1. Since launching in March 2017, the website was reached by 3,200 users from 119 different countries for a total of over 10,000-page views (see figure 1).
2. Technical Advisors have promoted the use of the toolkit in other projects they have been involved in.

14. Other implications

The Toolkit is available and free to access online at www.conservation.tools. It has been shared at major international meetings or events including:

1. Third Meeting of Signatory States of the Dugong MOU (MOS3), held in March 2017 in Abu Dhabi, UAE, which included the Toolkit launch. It was endorsed by the Dugong MoU Signatories for use by all range states in the implementation of the Dugong MOU and its accompanying Conservation and Management Plan at MOS3.
2. Third Executive Project Steering Committee Meeting of the Dugong and Seagrass Conservation Project, held in November 2017 in Trang, Thailand. The EAD and CMS Dugong MOU gave a presentation on the toolkit.
3. 22nd World Marine Mammal Conference, held on 23-27 October 2017 in Halifax, Canada. The EAD and the Dugong Technical Group gave presentations on the Toolkit. See web story.
4. World Seagrass Conference (WSC) and 13th International Seagrass Biology Workshop (ISBW13) held in June 2018 in Singapore. See web story on the conference.
5. 13th Meeting of the Conference of Parties to the Ramsar Convention on Wetlands (COP13) held in October 2018 in Dubai, UAE. A side event "The Dugong and Seagrass Research Toolkit – a decision support tool for dugong, seagrass and human communities research" was co-organized by the EAD and CMS Dugong MOU. See web story on the conference.
6. 23rd World Marine Mammal Conference, held on 9-12 December 2019 in Barcelona, Spain. Dugong and Seagrass Workshop, hosted by the Secretariat of the Pacific Regional Environment Programme (SPREP) and the Global Environment Facility (GEF) held on 5-8 March 2018 in Munda, Solomon Islands. The meeting provided Dr Kwan with the opportunity to highlight the conservation tools already available including the Dugong and Seagrass Research Toolkit. See web story.
7. 5th International Marine Conservation Congress (IMCC) held on 24 – 29 June 2018 in Kuching, Malaysia. On the final day of the conference, during the Oceans Online session, Mr Len McKenzie and Dr Richard Unsworth from the Dugong Technical Group ran a workshop on the Dugong and Seagrass Research Toolkit. See web story.

وزارة الصحة
MINISTRY OF HEALTH

Hayat - 'Life' Application

Ministry of Health and Prevention (MOHAP)

1. Description of the innovation

Background

Hayat comes in pursuance of the Federal Law No. 5 of 2016 on Regulation of Human Organs & Tissue Transplantation allowing transplantation of human organs and tissues after death, which was issued by H.H. Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE, to keep pace with the latest international healthcare standards.

Linked to the National Program for Organ Donation, Hayat was launched by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and ruler of Dubai, at the Arab Health forum in Dubai on January 28, 2019.

It is a free-of-charge application that can be downloaded on smartphones on iOS and Android platforms. It has a vast database of organ donors and potential recipients throughout the UAE, which is linked to the licensed public and private hospitals throughout the country.

At the Human Organs & Tissue Transplant & Preservation Regulatory Office, a live screen (A real time dashboard is displayed on the screen) is placed showing all the information provided from the donors and hospitals.

The smart app "Hayat" comes in three phases:

1. Phase 1 is designed for registration for organ donors after death.
2. Phase 2 is designed for hospitals registration of organ failure patients.
3. Phase 3 is related to coordinating records of donors and potential recipients while ensuring high levels of data security based on the blockchain technology.

Hayat phases

Phase 1:

The application allows people in the UAE regardless of their nationality and wishing to donate their organs after death to express their desire to do so by registering their data using their mobile phones. The application also allows registered users for postmortem donation to receive the relevant information about the overall state of organ donation in the UAE and various related activities.
Therefore, if an individual wants to donate his organs after death, he or she needs to follow the following process:

1. Download the application.
2. Choose a language from three provided options (Arabic, Urdu, English) and insert the name, address, emirates ID, date of birth and other necessary data. At this step, an individual also shares his or her OTP from the Ministry of Health and Prevention and re-adds it to the donors' system for identity verification. Then, add family member's contact details (optional), which organs they wish to donate, or select (all) organs. The user is required to sign his application electronically.
3. Receive a notification with the registration confirmation and all the information about the laws, procedures, etc.
4. Users can opt-out of the app unconditionally.

Phase 2:

As for the second phase, the electronic application (Hayat), is also designated for hospitals. All patients who need a human organ or tissue transplantation are listed in the inter-hospital dashboard, which contains the patients' personal and health data. When an organ or human tissue suitable for transplantation is available, hospitals have a common gateway to check the list of registered patients who need transplantation or a human tissue.

Therefore, for a recipient, the process will be as follows:

1. The hospital data dashboard extracts the recipient's data (e.g. emirate, etc.)
2. The hospital does the recipient's blood test and collects all the information necessary about the recipient's health
3. Artificial Intelligence does data matching between the patient and donors in the system

2. Objectives of the project

Main objectives

1. Save lives and offer new hope to patients with end stage organ failure by increasing the number of donors after death.
2. Promote the culture of donation and the extent of acceptability between members of the UAE population.
3. Increase the willingness of the public to donate organs.
4. Launch intensive awareness campaigns to encourage the donation of human organs from deceased patients.
5. Ensure the achievement of the objectives of the national program in this area.

Other objectives

1. The UAE is aspiring to take an advanced place in terms of enhancing organ transplantation practices and empowering transplantation of human organs and tissues.
2. The National Program for Organ Donation helps reinforce the culture of giving and tolerance among individuals from different nationalities.
3. Constitute a sustainable solution for a considerable number of patients with heart disease, pulmonary failure, liver cirrhosis & kidney failure.
4. Contribute to reviving hopes of many patients.
5. Help relieve the pain of thousands of patients and their caregivers, alleviate the burden on hospitals and cut down the budgets and expenditures allocated for treatment.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. The innovation supports the 'Wellbeing' purpose by using advanced systems for health management.
2. The innovation supports the 'Technology for Humanity' by adopting AI and blockchain to facilitate organ donation management.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Decreased the cost of living for citizens / residents
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

500,000 AED

7. Development stage

The innovation is in the implementation of its advanced phase (Phase 3).

Phase 3:

This phase is currently under the development. The MOHAP team is working on the allocation guidelines, building standards that will improve the matching of organs with patients. This is done based on the HLA and genomic analysis, organ verification and transplant optimization using AI and blockchain. One of the features added will be a system for organ trafficking prevention, controlled by AI.


mindray
60
100
120/80
8.5
50
38
1.39
1.69
10.0
66
60
120/80
600
900

8. Ideation

1. The idea came from the Minister of Health and Prevention, who released a decree, which aimed to establish the organ transplant centre. The Assistant Undersecretary for Public Health Policy and Licensing Sector then was empowered to control the organ transplant system in the UAE. Thus, the higher committee was organized involving multiple stakeholders, including the Ministry of Health, health authorities, the presidential office of Abu Dhabi, private sector entities, and others, The meetings take place once every 2-3 months.
2. After the issuance of the Federal Law No. 5 of 2016 on Regulation of Human Organs & Tissue Transplantation, and the Ministerial Resolution No. 521 of 2018, the team came up with new ideas to serve and help patients who are suffering from organ failures. The committee embarked on thinking about how to use best practices in the world, enabled by technology, to address the underlying objectives. For that, workshops were conducted, from which HAYAT was born. Eventually, phases 1 and 2 were developed for the ultimate solution. Later, a small team developed the phase 3 criteria.

9. Implementation

1. Representatives from the Mohammed Bin Rashid Al Maktoum University, Cleveland Clinic Abu Dhabi, Al Jalila Specialist Hospital for Children and Sheikh Khalifa Hospital are also members of the higher committee for organ transplantation, which ultimately were responsible for developing the application with support of the ministry's IT department for phase 2. The model was designed as a result of effective team work.
2. Communication and marketing:
    a. Marketing phase 1: the department for Government Communication for the Ministry of Health and Prevention used strong various channels, including social media, interviews, newspapers, and others. The Assistant Undersecretary conducted multiple awareness presentations in various places, e.g. at the Dubai Airport, about the organ transplantation and how people can become organ donors.
    b. Marketing phase 2: for the hospitals. The National Organ donation and Transplant Committee. went to inspect and evaluate hospitals based on international criteria to see which ones are licensed to receive and extract organs. Overall, 6 hospitals were allowed to transplant certain types of organs (the hospitals include the Cleveland Clinic Hospital, Sheikh Khalifa Medical Hospital Abu Dhabi, Dubai Hospital, Al Jalila Specialist Hospital for Children and City Medical Clinic). Thus, the hospitals were connected into the unified system that allows to see which hospitals need transplants and which ones have donors. Hospitals can use their unique usernames and passwords to feed in the data of their patients into this unified system avoiding duplication of data.

10. Participants

- Ministry of Health and Prevention - Public Health Policy and Licensing Sector
- Ministry of Health and Prevention - IT department
- Ministry of Health and Prevention – Government Communication Department
- Mohammed Bin Rashid Al Maktoum University
- The Presidential Office of Abu Dhabi
- Federal Authority for Identity and Citizenship (ICA)
- Cleveland Clinic Abu Dhabi
- Sheikh Khalifa Hospital
- Al Jalila Specialist Hospital for Children
- Dubai Hospital
- The Higher Committee for Organ Transplant, UAE

11. Start and end date

Phase	Date
Phase 1 launched during Arab Health	28 Jan 2018
Phase 2 launched during Arab Health	27 Jan 2019
Phase 3 under development	In process

12. Impact and results

Major achievements

- 23 cases of post-mortem/deceased conations
- 62 lives saved in UAE (39 kidney, 11 liver, 5 lungs and 7 heart transplants)
- 27 organs donated to patients in the Kingdom of Saudi Arabia
- 6 facilities licensed to perform organ transplantation surgeries

Other achievements

- 1,515 registered donors after death (live dashboard-showing statistics for the Hayat Application, as of 30 June 2020).

13. Other implications

1. Increasing happiness in the community
2. Value of giving and sharing
3. Sense of belonging as the country supports both locals and expats equally
4. Giving hope to people with end stage organ failure

دائـرة الشـؤون الإسـلاميـة والعمل الخيـري
Islamic Affairs & Charitable Activities Department

Donation Cards

Islamic Affairs & Charitable Activities Department (IACAD)

1. Description of the innovation

The Donation Cards aim to replace traditional donation channels that are widespread in Dubai. The traditional way of donating money to different charities is through physical desks and donation boxes in supermarkets, malls, government buildings, etc.

IACAD introduced an innovation that transforms the established donation experience through an enhancement of the value proposition and the delivery channels, leading to reduction of transaction costs and opening of new sources for donations:

Enhanced value proposition

Donation Cards are placed near supermarket cashiers near other consumer cards (e.g. Apple Pay, Careem credits, Google Play store), allowing customers to buy them as another consumer items bundled within their grocery purchases. In addition, each card has a very specific typology and does not represent a generic donation to the charity, instead helping to allocate a donation to a specific cause (e.g. 100 AED to offer healthy meals to workers, 10 AED to help needy people by paying their debts restoring their freedom, etc). The donation is settled directly by the supermarket to the charity, without triangulating the money through IACAD or other organizations.

New customers

The new Donation Cards are targeting a new customer base: those potential donors which are not necessarily used to the traditional donation tables or prefer not to use cash, as well as those have limited time to attend a donation table.

Phases:

The initiative is split into three key phases:

Phase 1
Scanning the Donation Cards at the cashier in food stores. The card remained at the store.

Phase 2
Scanning a QR code on the Donation Cards, which allows to pay a donation using a mobile SMS. The channel was made available at Mosques as well

Phase 3 (Pending)
The channel will be made available at malls with high footfall, allowing people to donate through contact payments (e.g. Apple Pay, Samsung Pay). In the future, donors will be able to select donation initiatives online, with an option to complete the payments through international payment gateway platforms (ECP)

New experience

The entire traditional donation experience and has been transformed with an improved design, focusing on accessibility and ease of use. The Donation Cards contain the minimum information required, simplifying the way donors understand and access the information.

Partnerships

For the success of this innovation there are three key parties involved: the merchant (i.e. a retail store or similar), IACAD (as the coordinator of the program), and the registered charities which established a direct relationship with the merchant.

Cost reduction

The Donation Cards allow to reduce several cost items associated to the traditional donation desks such as manpower costs, cost of vouchers and others. They also help improve the entire logistics associated with cash donations: there is no need for handling cash payments, bank deposits, etc. In addition, Donation Cards are reusable: a cashier puts them back on the display shelf, reducing the number of printed cards.

Thus, the innovation is able to achieve the following benefits:

1. Providing secure donation channels
2. Accessible and confidential
3. Adopting cashless strategies
4. Green donation
5. Eliminate human risk for collecting and transferring the funds

2. Objectives of the project

Main objectives

1. Increase accessibility, security and ease to donate
2. Increasing exposure to donation programs
3. Attract new audiences (e.g. millennials) that are not used to traditional donations
4. Simplify the experience of donation
5. Broaden the demographic base of the current donors (from usual donors highly rooted on Emirati nationals and Arab nationalities) to reach the +100 nationalities that live in Dubai

Other objectives

Modernise the traditional way of giving donations to align with Dubai growth ambitions

This innovation aimed to address the following challenges:

Traditional donation channels were not aligned with Dubai's modern image and brand

Traditional donation desks have limited options of payment, limited attraction of donors and are costly to run, maintain and operate

Donation boxes faced security risks as they are prone to theft, and the process of collecting donations is long and unsecure (involves collection, transfer of money, counting, and deposit in a bank)

Traditional channels are still preferred by the older generation (e.g., physically donating cash through boxes and desks), and the new donation channel should match the speed of instantly donating money through traditional channels

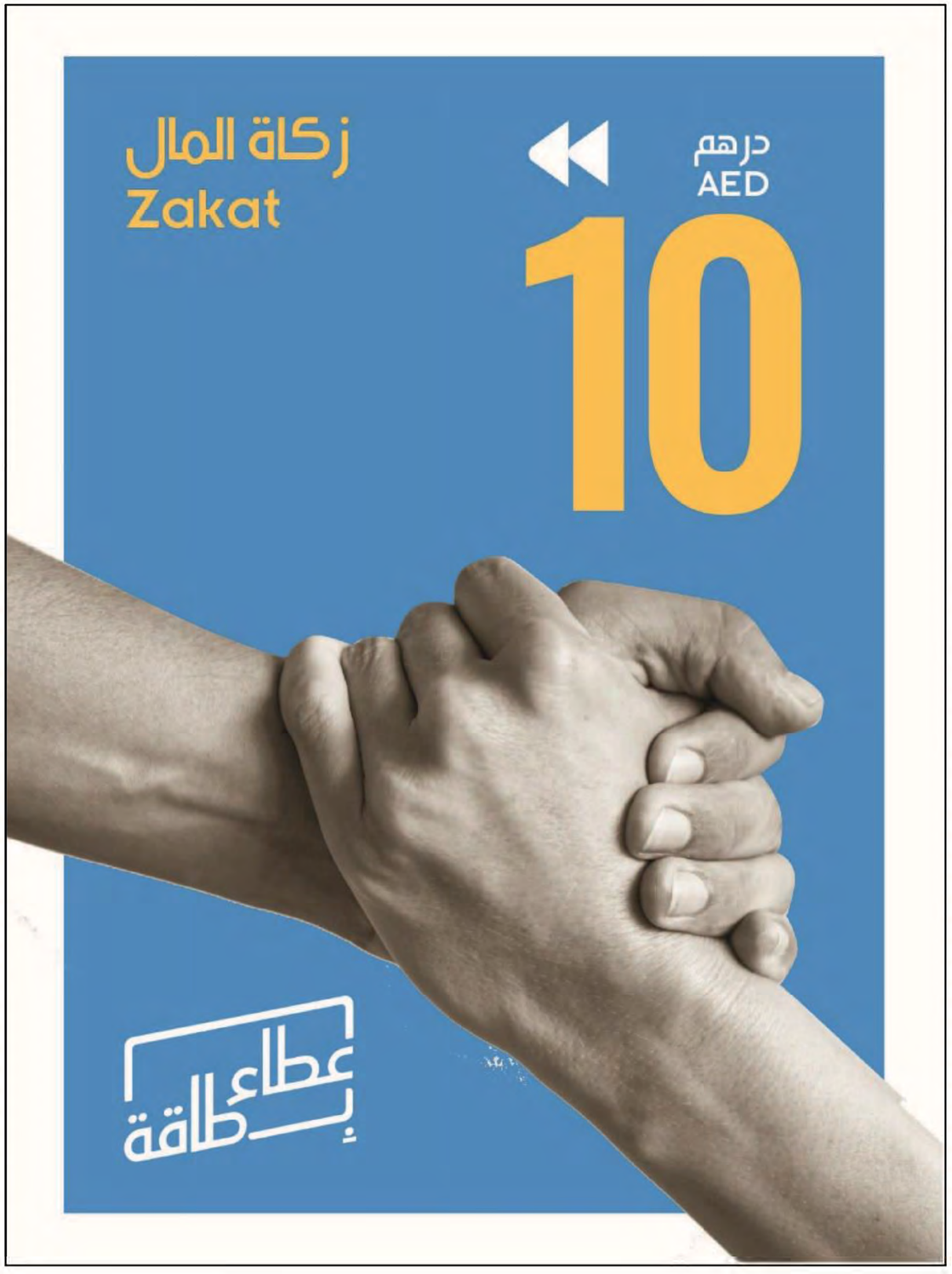
The mentality of individuals in the charity field is outdated and lacks innovation

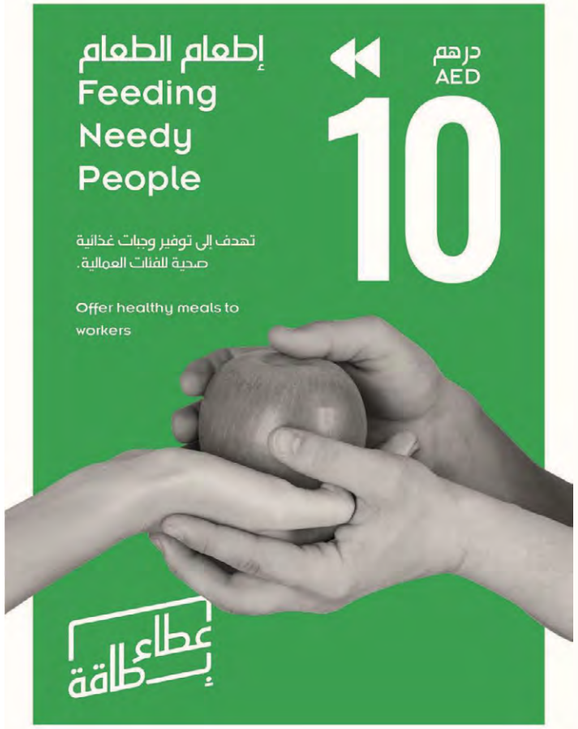
3. Link to the National Advanced Innovation Strategy (NAIS)

Supports 'Life', 'Wellbeing' and 'Education and Future Skills' purposes by encouraging people to donate in various fields related to Schools, Water Wells and Aid, Endowments and Education, Family, Clinics, Orphanages, Healthcare Projects, and others.

4. Type of value created

- New service/ product
- Speed of delivery
- Quality of services
- Access to services
- Employee satisfaction
- Communications within organisation, citizens and businesses
- Customer satisfaction
- Process efficiency


زكاة المال
Zakat
درهم
AED
10
عطاء بطاقة


إطعام الطعام
Feeding
Needy
People
تهدف إلى توفير وجبات غذائية
صحية للفئات العمالية.
Offer healthy meals to
workers
درهم
AED
10
عطاء بطاقة


برنامج إمارات
الخير الإذاعي
Emarat Al
Khair Radio
Program
برنامج إعلامي يعتبر منصة إعلامية
خيرية لتحقيق التكامل بين المؤسسات
والجمعيات الخيرية المرخصة في الدولة
وتهدف إلى عرض الحالات الانسانية ا
لاكثر احتياجا لدعمها ماليا وكذلك عر
ض المشاريع الخيرية للتشجيع عليها وإ
تاحة دعمها من الجمهور.
A radio program where they
showcase the needy people cases
and tell people to help them
درهم
AED
10
عطاء بطاقة


سرير الخير
Patients
تهدف إلى مساندة المرضى
المعسرين من خلال دفع
تكاليفهم العلاجية.
Supporting poor
patients by paying
for their treatments
درهم
AED
10
عطاء بطاقة


كرسي العلم
Education
تهدف إلى دعم الطلبة وإعانتهم على
استكمال مسيرتهم التعليمية من خلال
إسناد أهلهم المعسرين في دفع
تكاليف الدراسة وما يتعلق بها.
Help the child's parents by
paying for their education
درهم
AED
10
عطاء بطاقة

5. Impact meter

- Enhanced access to finance for citizens / residents or businesses
- Reduced the cost of goods/services (produced / delivered)

6. Budget

In-house

7. Development stage

The innovation is currently in the implementation stage.

8. Ideation

1. After conducting a Survey about Dubai's Society awareness regarding donations and channels for donation, the result was that most of the people want to donate via safe and confidential channels.
2. The idea of donor cards came from brainstorming sessions thinking about gift cards, similar to other retails stores, and ways to customize to address the challenges of IACAD related to donations.
3. SWOT analysis was conducted as part of the feasibility analysis of the idea.
4. Thinking of how to get to more donors in a more convenient way, the team thought of including the donation cards on the shelves with the most demanded items such as gift cards available in the retail store, e.g. Amazon gift cards, PS4, Apple, Xbox.

9. Implementation

Process

1. Aswaq retails was the first retail store to adapt the donation card idea in a pilot phase until the full fledge launch.
2. As a government entity, there was a lot of support from the higher management and related stakeholders to execute this idea. After the PoC with Aswaq, IACAD continued to work with multiple stakeholders in the retail industry.

Challenges faced during implementation

1. Lack of awareness is the main challenge for donations.
2. In order to expand the program, multiple stakeholders need to be brought on board.

Future plans

1. While the pilot phase has been successfully accomplished in one Aswaaq supermarket, IACAD are in the process of extending the roll-out to other branches. In addition, IACAD is in final discussions with other retail chains, such as Union Corp and Carrefour. Lulu has approved the initiative and is pending implementation.
2. The aim is to replace all stand-alone donation boxes with secured coded cards and offer multiple channels of payment.
3. Donation boxes are yet to be removed across Dubai, and currently more than 5,000 boxes exist. New donation boxes are not being licensed.

10. Participants

The innovation was co-developed with a long-term partner they work with, Aswaaq, the supermarket chain. While the idea was originated in annual brainstorming session they had with the top management of the supermarket, where they discuss potential actions to improve and innovate the donation process.

11. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
May 2018 (pilot implementation)	Full roll-out: end of 2018

12. Impact and results

The pilot was conducted within one supermarket branch. In the 2-month pilot there were 330 donations registered using this new donation mechanism.

Using the donation card, over AED 793 million has been attracted to date (as of 31 March 2020).

Distributed Acoustic Technology

Dubai Roads and Transport Authority

1. Description of the innovation

The Dubai Metro is a fully automated rail system with currently 2 operational lines, Red Line & Green Line, through the city of Dubai. The Red Line has 29 stations (24 elevated (by means of a viaduct), 4 underground stations, and 1 at ground level), spanning 52.1 km long, with 4.7 km underground. The Green Line has 20 stations (12 elevated (by means of a viaduct), and 8 underground stations), spanning 22.5 km long, with 7.9 km underground.

RTA was the first Metro worldwide to utilize the Distributed Acoustic Technology in Metro systems with the fiber cables. The technology uses optical fiber to act as both the sensing element and the transmission medium along the 80 kilometer metro railway. In distributed fiber sensors, an optical fiber – which normally is a few kilometers long and housed inside a cable - is connected to an optoelectronic interrogator. The interrogator then launches optical pulses into the fiber. As the optical pulses propagate along the core of the fiber, they interact with the material of the core and a small fraction of optical power is scattered, propagating back towards the interrogator. The interrogator then analyzes this backscattered signal as a function of time and, depending on configuration, it can discriminate strain or acoustic signal as a function of distance along the fiber. Optical fiber sensors also allow operators to detect in real-time any item drop on the rail track. It gives an operator the location and size of the item, allowing for the necessary action to be taken, such as stopping the train service if required.

2. Objectives of the project

Direct objectives

1. Real time detection of obstacles fallen on the track which enhanced and maintained safety level of rail operation.
2. Detection and tracing the movement of any non-communicated vehicle on track.
3. Enabling centralized notifications at the Operations Control Center (OCC), enhance operational efficiencies.
4. Install a new obstacle detection system having minimal installations on wayside area in Dubai Metro, using 'Distributed Acoustic Sensing Technology.
5. Implement a cost effective solution compared to the traditional systems.

Indirect objectives

1. Identify track defects, thereby reducing operational disruptions, derailment risks and damage impacts.
2. Identify train wheel flatting or defect, supporting safe operation of the train and ensuring passengers' comfort.
3. Foster improved incident handling of intrusions in the railway track environment.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supports the 'Mobility' purpose by using Acoustic Sensing Technology to support the creation of the world-class infrastructure, to ensure good quality maintenance and safety of railroads.

4. Type of value created

- Quality of services
- Employee satisfaction

5. Impact meter

- [x] Increased the quality of life of citizens / residents
- [x] Reduced negative impacts to the environment (e.g. reduce carbon emissions)

6. Budget

4,500,000 AED

7. Development stage

The system is installed and is in the trial operation phase.

8. Ideation

1. RTA studied different options to mitigate the risk of falling objects from the overhead bridges and surroundings of the Metro viaduct. Internal brainstorming was conducted with consultants to evaluate the available technology in the market.
2. The Distributed Acoustic Technology idea was developed from InnoTrans Confronting in 2017. Traditionally, the technology is used mainly to monitor oil and gas pipes. RTA has developed a proof of concept (POC) with 3 international vendors to utilize the technology in a metro railway. The results of the POC were evaluated and the scope of the project was provided in corporation with the metro operator and system providers.
3. Further developments were carried out to identify additional use cases of the system. The following use cases were proven to be feasible and beneficial:
    a. Obstacle detection and falling object detection.
    b. Real-time tracking of trains
    c. Track defect monitoring
    d. Unauthorized access to the track
4. A detailed design was developed for each use case and was implemented for the Red line. The development of this innovation was a result of cooperative work between the rail maintenance and rail operation teams in RTA, as well as the metro operator and system vendors.
5. The validation of this innovation was done in the metro outside service hours.

9. Acceleration

1. The project was initiated as part of the RTA execution plan in 2017. The approval of the project was achieved by developing a business case for the management. The official approval process in RTA starts with submitting the idea in the RTA Project Management System. The project life cycle was fully managed by the RTA OPMS system that provides an efficient process for approvals and reporting of the project status, schedule, budget, risks, milestones, issues, etc.
2. Following the validation of the project objectives, the official tender document was developed and project detention statement was initiated. RTA received multiple proposals from international vendors that were willing to participate in the development of the system, and RTA team carried out a technical and commercial evaluation.
3. To accelerate the project execution, a report was raised to the higher management in RTA for approval.
4. The following cases were demonstrated during the project:
    a. Capability to detect infrastructure obstacles in real-time
    b. Accuracy of the detection (location and size of the obstacle)
    c. Identification of unauthorized personal intrusion in real-time
    d. Capability to distinguish between normal operation events and incidents
    e. Avoidance of false alarms
    f. Alarms and warning generations
    g. Flexibility of the system to configure different zoning
    h. Understanding of the rail environment


MERAKI
EVERGREEN

10. Implementation

Full list of project activities

1. Define and agree on the project scope, solution and technical requirements.
2. Develop the Proof of Concept (POC) of the bidder's solution.
3. Initiate the Project Definition Statement (PDS), technical and commercial definition of applicable contract(s) or tender(s), terms and conditions.
4. Prepare and distribute the 'Request for Proposal' / Tender documents to bidders, with adherence to all RTA / Serco procurement, commercial and financial governances.
5. Obtain proposals for the project scope (rollout of solution).
6. Technical evaluation of POC reports by each bidder.
7. Commercial evaluation of proposals received from each bidder.
8. Shortlist and approve a bidder based on commercial and technical review of POC reports and submitted proposals.
9. Project approval and instruction to commence.
10. Technical and commercial definition of PO terms and conditions.
11. Issue of POs for stated scoped works.
12. Submit a detailed project execution plan.
13. Initiate and manage enhancement to the asset via the 'Asset Configuration Change' process and circulate among relevant internal stakeholders for approval of the change, if applicable.
14. Relevant Person in Charge (PIC) training for relevant contractor's personnel to execute the defined works, if applicable.
15. Issue an applicable Permit to Work (PTW) to safely execute the scoped works.
16. Project execution and delivery.
17. Project monitoring, control and quality check during/ on conclusion of the works.
18. Submit project closeout documentation, warranty certificates, etc.
19. Project sign-off, payments and closure.

11. Participants

- RTA rail maintenance
- RTA rail project and planning
- RTA rail operation
- RTA quality and system assurance team
- RTA financial team
- Metro operator maintenance team
- Metro operator project management team
- Metro operator quality and system assurance team
- Contactor team

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
01-Apr-2017	31-Jan-2020

13. Impact and results

Results achieved

1. Risk of train collusion incidents with fallen obstacles on track across Dubai Metro is reduced.
2. Asset sustainability has been improved because of monitoring.

Results expected

1. Promote RTA for utilizing pioneer technology
2. Provide cost efficient solutions
3. Enhance Metro safety
4. Enhance metro assets sustainability

14. Other implications

The project was selected as part of RTA initiatives for RTA Elite Awards and DGEP Awards.

Smart HR Kiosk “HR Pulse”

Dubai Sports Council

1. Description of the innovation

Smart HR Kiosk is a smart device designed to provide all services and operations related to human resources for the benefit of Dubai Sports Council staff 24 hours a day, working as a ‘virtual employee’.

It is considered to be one of the most important initiatives launched by Dubai Sports Council to follow the innovation approach of the Dubai government, providing smart solutions in the work environment in order to delight and serve employees, as well as optimize time and resources.

HR Pulse provides more than 43 services in 6 categories:

General Information	Recruitment Documentation
Forms and Reports	HR Policies and Laws
Certificates	Personal Documents

All services and documents are available within (30) seconds, using the touch screen on the smart device which helps in saving effort and time. An employee can update personal information whenever necessary, without going to the HR section. The ‘HR Pulse’ kiosk also has an “Ask HR” option, where employees can direct their queries to the HR section and get a reply within 24 hours.

A user can access reports, documents, letters, forms, as well as obtain approvals without referring to the Human Resources Department.

As an example, the kiosk provides work certificates, salary, experience and no-objection documents in both Arabic and English signed with barcode.

An employee can send a relevant document directly to his email through the system. Documents can also be scanned using the kiosk. It can identify an employee by entering the job number or using an Emirates ID card.

The kiosk was designed to meet the needs of people of determination, and it meets the ADA (Americans with Disabilities Act) Standards, with a lower screen and a voice speaker system.

The ‘HR Pulse’ kiosk also embraces the Dubai Government’s “Go Green” initiative. The system is integrated with the employee’s work email address and only (10%) of the services offered are authorized to print, thereby encouraging employees to “Go Green”.

2. Objectives of the project

Main objectives

1. Be in line with the directives of the senior leadership and the Dubai government towards converting paper services to electronic services.
2. Eliminate executive positions in the human resources department and focus on future jobs.
3. Reduce the time and effort involved in archiving employee documents, providing human resource services for the council staff 24/7.
4. Increase employee satisfaction and happiness index.

Other objectives

1. Ensuring business continuity according to ISO 22301 standards.
2. Focus on creating an attractive work environment by launching initiatives, policies and activities that help raise employee happiness.
3. Evaluate the services provided by the Human Resources Department and link it to the Happiness Questionnaire.
4. Make all policies, initiatives and laws accessible to staff.
5. Open an area for inquiries for employees to be addressed through the device.
6. Provide an electronic file for each employee with the feature of accessing and updating data by the employee himself.
7. Make the device easy to use through the national ID card or the user name.

Challenges addressed

1. Paucity of staff. There are only two employees in the HR section and they have been providing all the services to all DSC staff and other entities that come under DSC.
2. Challenge in finding the right candidate. Finding the right candidate to join the HR team considering the training, effort and time is not an easy for the HR team, given their volume of daily work.
3. Council's work requirement. Given the nature of Dubai Sports Council's work as event organizers, which demands commitment from employees to work day and night, including the HR team, providing their full support.
4. The Budget. The Dubai Sports Council has limited budget for hiring every year, and most of it is used to hire employees for its core business departments. HR, being a support section, does not have priority for hiring in the organisation.
5. Providing HR services 24/7. One of the reasons for implementing this project was the need of providing HR services at any time and at the convenience for the employee. This will create an atmosphere of happiness, which in turn generates employee loyalty.
6. Smart file for every employee. Most organizations still keep hard copies of their employee files, which is a risk and could lead to disruption of business in case of an unfortunate incident or event.

3. Link to the National Advanced Innovation Strategy (NAIS)

The innovation supports the 'Technology for Humanity' purpose by adopting digital technology in the HR field, ensuring ease of access to services at any time.

4. Type of value created

- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Employee satisfaction
- ✓ Communications within organisation
- ✓ Process efficiency

5. Impact meter

- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- ✓ Increased the number of units of a good/service produced / delivered
- ✓ Reduced the cost of goods/services (produced / delivered)

6. Budget

250,000 AED

7. Development stage

The innovation is currently in the Scale Up phase.

Next steps

Three phases are considered for the innovation:

1. Launch the kiosk – completed
2. Launch a mobile application – in progress
3. In long term, plan for the elimination of the HR function. The kiosk can fulfil the duties of 2-3 HR staff. It can answer all the necessary services to employees using the AI – in progress

8. Ideation

Background

The inspiration for the project came from the Vision of H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, who has said that the "Employee is the focus of any government entity and achieving his well-being and happiness is the goal and objective".

The device is the fruit of the efforts and planning of young local cadres from the Dubai Sports Council, which was based on the keenness of His Excellency / Mattar Al Tayer, Vice President, and His Excellency Saeed Mohammed Hareb, Secretary General of Dubai Sports Council, to encourage the culture of innovation by keeping pace with rapid developments.

Ideation process

1. The team started working on the project in 2017. The reason behind the idea was the need of the organisation to grow and hire more employees, while providing all the services needed to employees. At that time, there were only two HR staff to cover the support of around 100 employees. Thereby, the demand came from the higher management to find a way to provide the HR services 24/7.
2. The initial thought was to hire a new employee. However, this was not an easy option (considering the amount of effort needed to cultivate a suitable candidate and that the organisation was involved in around 400 events around the year at that time).
3. Then, the idea came to create an electronic kiosk with all employees' files and services for HR, without the need to hire new employees, inspired by a bank ATM concept.

9. Acceleration

Acceleration process

1. The team started thinking with the HR team about what services need to be included in the kiosk. Each request and transaction (for all of the services) were analysed.
2. While working on the proposal, there were brainstorming sessions conducted with different people, including the IT team to analyse the feasibility of the proposed features.
3. For the look and feel of the kiosk, during the brainstorming sessions, it was decided that the device should stay within the sports industry in its layout (to best represent our organisation). The two most known games in the world were chosen: football and basketball. Another item that can be found in all the games is a whistle. Therefore, the final design had a look of a whistle. Also, after the completion of each transaction, there is a whistle sound produced.
4. Also, two types of services needed to be separated: DSC collecting information from employees and vice versa.
5. Many other aspects were also analysed, e.g. to reduce the environmental impact, an option to send emails was added (instead of an embedded printer).

10. Implementation

1. The kiosk was completely designed and tested in-house (including the services to be added and the design). The HR team was working with the contractor that built the kiosk. The DSC team also considered the people with special needs in the design, paying more attention to the language, the height, the icons, and look and feel of the screen.
2. It took 1 year to collect all the information and create the e-files for each employee. The management was really pleased with the kiosk that was launched and the facilities.

Challenges

1. The number of employees in the Human Resources Department decreased (2).
2. Convert all employee files to electronic files.
3. Inventory all operations and services of the Human Resources Department and convert them into electronic services with a focus on reducing paper services.
4. Work to simplify the operations in the device and facilitate its use for all job groups and people of determination.
5. Linking the institutional identity to the agency.
6. Continuous updating of the device to suit the Council's innovative and development aspirations according to the needs of its employees.

11. Participants

Dubai Sports Council (IT, HR, top management)

Contractor (the developer of the kiosk)

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
2017	2019

13. Impact and results

Main impact and achievements

- The HR Pulse project saved almost 8 million AED from Councils budget since 2018 and for (4) years.
- 22,100 transactions completed since its launch (as of 28 May 2019)

Other impact

1. Smart Kiosk helped in creating files, insuring against any such mishap, and additionally, this smart kiosk is considered as the most, first and fast device in providing 43 HR Services.
2. The HR Pulse kiosk inspired Dubai Police to launch a similar smart device.

14. Other implications

Later, different government and private entities visited DSC to learnt from the DSC experience and adopted a similar solution.

دائـرة الـثـقـافـة والـسـيـاحـة
DEPARTMENT OF CULTURE AND TOURISM

E-Inspection Chat Bot

Department of Culture & Tourism - Abu Dhabi

1. Description of the innovation

The innovation combines leading AI and cognitive services offered by Microsoft. The innovation aims to address the below business cases which after a study are found to be very frequently used:

1. Retrieval of establishment details. This feature is used by the inspection team in order to retrieve the details of an establishment.
2. View establishment's inspection history. This feature is used by the inspection team in order to retrieve the past inspection reports and ensure that the non-compliant items have been fixed.
3. Inspection outcome reports. This feature is used to generate a report for inspection.
4. Establishment classifications. This feature provides the details of the establishment classification, commonly known as the "star rating" of a hotel, etc.
5. Let the establishments perform self-inspection to adhere to the hospitality compliance. This feature is used by the establishment owners and managers to self-inspect their establishment against the regulations set by the DCT for their establishment. This is a very important element of the innovation which can help self-determine the compliance to the standards.
6. Website authentication credentials. This feature is the most frequent used feature in the portal which leverages the establishments to retrieve their authentication credentials to log in to the website.
7. Self-inspect various designators' eligibility before submitting the application. Trialing designators is a cutting-edge feature which DCT expects to open new horizons to the hospitality industry in the emirate. Hotels can now self-inspect themselves to categorise their property by a right genre of hospitality (e.g. Luxury Hotel, Family, Resort, etc.).
8. Propose inspection plans. This feature is used together by the inspectors as well as establishments' managers to prepare their inspection plan for the current and next fiscal year.
9. Allow the business to effectively send notifications and announcements. The chat bot feature has enabled the DCT to effectively communicate with all its e-Inspection Portal stakeholders.
10. Provision of documents and compliance resources for adherence. The chat bot can also assist its users to share with them the resources such as documents, policies etc.
11. Incident reporting. This is another feature which is very frequently used. It enables both the inspectors and the establishments to open a support case with DCT.
12. Communicate with chat bot in a real-time environment where it can respond to establishment's queries. The chat bot is equipped with a real time AI and cognitive engine, with which anyone can communicate in a humanly fashion. This feature requires fine tuning and gains maturity with the passage of time.

2. Objectives of the project

This innovation was planned and implemented in response to Abu Dhabi's e-governance initiative, in which Abu Dhabi intends to automate maximum services and provide solutions to business queries without or with minimum human intervention.

The service intends to provide 24/7 support to its establishments, enhance user experience by introducing a quick and effective channel that can offer direct one-on-one communication between businesses and establishments, and effectively automate day to day tasks.

3. Link to the National Advanced Innovation Strategy (NAIS)

Supporting the 'Technology for Humanity' purpose by using advanced technologies, such as AI and big data to improve the customer journey and add new features for its users.

4. Type of value created

- New service/ product
- Speed of delivery
- Quality of services
- Access to services
- Employee satisfaction
- Communications within organisation
- Customer satisfaction
- Process efficiency

5. Impact meter

- Increased the quality of life of citizens / residents
- Increased the number of units of a good/service produced / delivered
- Reduced the cost of goods/services (produced / delivered)

6. Budget

In-house

7. Development stage

Scale up: The project is implemented and live. The system is being trained continually to widen the scope of its cognitive abilities.

8. Ideation

In line with the directives of Abu Dhabi Government on innovation and provision of smart services to the business sector, DCT's Digital Transformation Department and the Licensing & Regulatory Compliance Department collaborated to improve the work of their respective business units. Together they identified the most common interactions of the establishment related to its inspectors and came up with the idea of introducing a collaboration channel that requires no or very little human intervention.

DCT Digital Transformation experts decided to utilize AI and cognitive services to build a chat bot service that can address common business queries quickly and effectively.

E-Inspection chat bot provides a variety of services which can help business establishments and DCT teams to do work smartly with various data and information provided within seconds. This innovation has opened doors to many other dimensions in which now DCT found opportunities to boost tourism in the region.

During the ideation phase, it was envisioned to transform the conventional way of inspection and adherence of the hospitality industry to regulations, leading to enhanced DCT offerings and improved relationship management.

9. Acceleration

The idea of having a chatbot was discussed with the business owner and product owner of the inspection section. Afterwards, a design thinking exercise with user journey development were done. Design sprints were conducted with the stakeholders and a roadmap for the chat bot was developed.

The design, process and features of the E-Inspection Chat Bot, which were proposed by the IT team collaboratively with the inspection team, were approved by the project owner, inspection section manager and the business owner based on the license regulatory and compliance standards. Thereafter the in-house implementation started accordingly.

10. Implementation

The implementation of this project was accelerated and completed within 4 months, from September 2018 to December 2018. It started with dedicating a DCT technical team: two developers, one information security specialist, one quality assurance specialist, one infrastructure specialist, - to develop and test the features of the E-Inspection Chat Bot. The bot was tested for user acceptance and other criteria such as performance, security, penetration, etc. In additional to the technical team, the project team was testing the chat bot features and providing feedback for farther improvements. The bot remained in the testing phase until all sort of essential test cases were executed and their expected results were achieved.

After completing the development and testing phase, the DCT inspection team together with the DCT IT team started communicating with and training relevant stakeholders (such as hotels representatives and DCT inspectors) to use the chat bot with its available features. After various familiarization sessions, the chat bot was made live on the inspection portal and a strategic learning and enhancement plan was put in place to make the chat bot smarter and more effective every day.

11. Participants

The innovation is a result of collaboration of many teams and individuals. Below are the teams which worked on the project:

- Software Development consultants
- Business Analysts
- Software Quality Assurance Expert
- Information Security Experts
- Infrastructure Team
- Inspection Team
- Excellence Team
- Hotel Mangers

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
Sep 2018	Dec 2018

13. Impact and results

1. Over 95% excellence achieved in customer satisfaction.
2. Time consumed to access services decreased by 50%.
3. Number of phone and direct communication with the inspection and IT teams decreased by 50 % for processes related to inspection system and process.
4. Less incident reporting for the SSO services.
5. More hotels applying for designators resulting in diversified business opportunities.
6. 'Ease of Inspection' index has increased. Inspectors also utilise the chat bot for common routines.
7. Compliance to DCT standards has improved and less violations are observed.

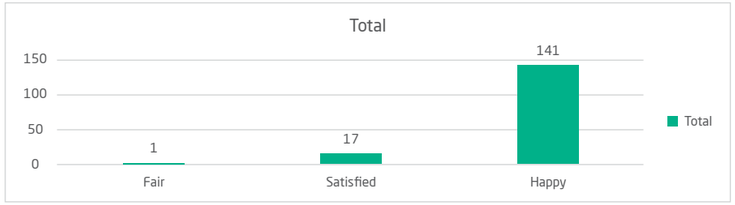


Figure 1 The satisfaction survey conducted on 2019 until the first quarter of 2020.

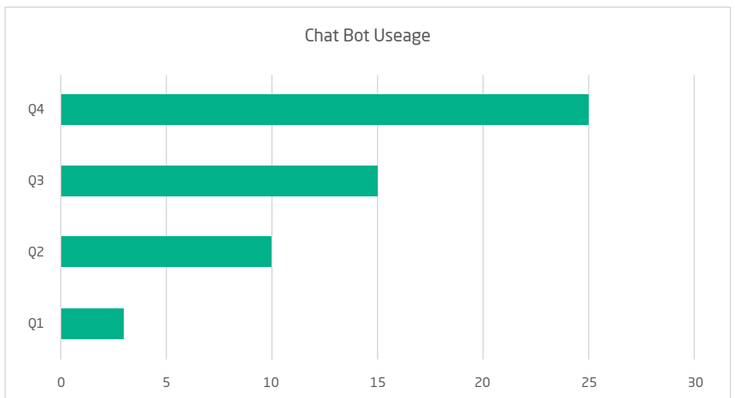


Figure 2 The chatbot usage survey conducted in 2019 until first quarter of 2020.

Smart Park – Al Mamzar

Dubai Municipality

1. Description of the innovation

Dubai Municipality created a new smart park by not only bringing new colours, plant varieties and facilities, but also incorporating multiple technological elements to decrease pressure on the natural environment and improve visitors' experience.

For example, the Al Mamzar Park smart application allows visitors to take a 3D virtual park tour and get notifications about ongoing events. They can also use VR glasses to learn how to care for plants. The park redesigned its facilities to comply with the Dubai Code for people of determination.

Aiming to provide a safe environment for children, parents can track the locations of their children using smart bands. Additionally, for the smart rescue service, the park provides unmanned drones to save the lives of drowning people.

To reduce the impact of the high weather temperature, Dubai Municipality provided different solutions:

1. Smart benches with a cooling feature, which also allows to charge their mobile phones.
2. Smart oasis generates drinkable fresh water from the humid air and sprays water for cooling using solar panels.
3. Scanning the park and analyzing collected data using artificial intelligence to identify major indicators that help manage the park effectively.
4. Smart irrigation, which resulted in reducing the water consumption by 25%.
5. Using smart paint with nanotechnology to reduce sulfur dioxide pollutants by 46.2% and volatile organic compounds by 98.4%

2. Objectives of the project

In line with Dubai 2021 vision and Dubai Municipality strategic goal to develop attractive recreational and public facilities, Smart Park initiative was launched. Al Mamzar Park is the first smart park in the world that leverages technology to redesign visitors' experience and operate public parks effectively through:

1. Providing new and innovative services in Al Mamzar Park
2. Transforming all services provided in the park into smart services.
3. Developing the park landscape and introducing innovative designs.
4. Development and improvement of rescue operations.
5. Introducing smart services and facilities
6. Create an identity for the park.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Reduced water consumption and unique water technologies contribute to the Life purpose
2. Fully supporting the ambition to develop smart cities and ecosystems under the purpose of Technology for Humanity

4. Type of value created

- ✓ New service/ product
- ✓ Quality of services
- ✓ Customer satisfaction

5. Impact meter

- [x] Increased the quality of life of citizens / residents
- [x] Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- [x] Reduced water / energy consumption

6. Budget

4,144,000 AED

7. Development stage

Currently the project is in the post-implementation/ scale up phase.

8. Ideation

Summary

Supporting the achievement of the Dubai Vision 2021 and Dubai Municipality strategic goals to Develop Attractive Recreational and Public Facilities and to Provide Intelligent and Integrated Services and Solutions, Dubai Municipality started with listing and evaluating the services provided at Al Mamzar Park to find the gaps that needed to be improved.

After, brainstorming sessions, internal and external best practice benchmark, as well as feasibility studies were conducted to evaluate relevant innovative ideas. For this initiative, a forum for customers was launched, where visitors to public parks and users of the chalets of Al Mamzar Park were hosted and had a chance to participate in an open discussion to suggest ways to develop services based on their needs and expectations. This was followed by prioritizing services to be improved and preparing plans and programs for implementation.

Detailed steps

1. List and evaluate the services provided at Al Mamzar Park to find the gaps that needs to be improved and prepare a report on the results and recommendations.
2. Conduct brainstorming sessions to evaluate the innovative ideas.
3. Study the best practices inside and outside Dubai Municipality in providing services.
4. Conduct a feasibility study to implement innovative ideas by reviewing global best practices.
5. Organise a forum for visitors of public parks and users of the chalets of Al Mamzar Park with open discussions to identify their needs and wants.
6. Prioritise services to be improved.

9. Acceleration

Summary

Thus, a working group of stakeholders was formed with individuals from various departments, in addition to the innovation team, to follow up and implement the tasks required to accomplish the initiatives. As part of the process, it was important to define partners and their role in the initiatives to ensure their commitment to the business plan.

Detailed steps

1. Form a working group of stakeholders in the initiatives in the various departments in addition to the innovation team to follow up and implement the tasks required to accomplish the initiatives.
2. Receive an approval for the formation of the Smart Mamzar Park team by His Excellency the Director General of Dubai Municipality.
3. Identify the companies to partner with for implementing the initiatives, evaluate their quality and choose the most suitable ones.
4. Prepare the implementation plan and identify the key success factors. Link the initiatives to the indicators of services, complaints and notifications submitted, as well as suggestions of customers and partners.
5. Determine the resources necessary to implement the initiative to transform AL Mamzer Park to Smart Park.
6. Prepare the marketing plan.
7. Link initiatives to the key success factors.
8. Determine the budgets required to implement the initiatives.
9. Receive an approval of the budget from His Excellency the Director General of Dubai Municipality.

10. Implementation

Summary

The implementation plan and marketing program, linked to basic success factors and KPIs, were prepared and updated on a weekly basis, with the tasks distributed between team members.

To ensure the success of the project, the performance indicators and timelines were followed strictly. Training programs were realised to teach employees on how to handle smart services and solution. Also, awareness sessions for workers and customers were conducted to announce and clarify the new improvements.

Detailed

1. Implement initiatives that contribute to obtain results according to the approved strategic objectives of Dubai Municipality. (Strategic Objective No. 16: Providing Intelligent and Integrated Services and Solutions, Strategic Objective No. 17: Developing Attractive Public and Recreational Facilities), conducting weekly meetings with the approved team.

The use of modern scientific methods and solutions in implementing the initiative:

1. List all initiatives related to smart solutions, which are planned to implement include: artificial intelligence, blockchain, 3D printing, robots, big data, open data.
2. The use of artificial intelligence in the service of smart scanning.
3. The use of nanotechnology in the Smart Paint initiative.

The measures taken to overcome difficulties and obstacles:

1. Follow up the performance indicators of the improvement initiatives during the implementation period to know the actual situation and make the necessary changes.
2. Commit to implement initiatives during a specific period of time without overrunning.

Approach to the management of initiatives' change:

1. Develop training programs to train employees on how to handle smart services and solution.
2. Conduct awareness sessions for workers and customers to clarify and announce improvement initiatives for the services provided.

Effective implementation processes and efficient financial spending:

1. Develop procedures to rationalize expenditures and calculate expected annual savings.
2. Calculate costs for implementing initiatives and calculate value added and return on investment in the short and long term.
3. Follow up the implementation of the initiatives and prepare periodic completion reports.
4. Form a working group in various departments in addition to the innovation team to follow up and implement the tasks required to accomplish the initiatives.
5. Follow up reports on the percentage of achievement of improvement initiatives during the implementation period, stating the challenges and setting urgent mitigation procedures.

11. Participants

Smart Mamzar Park team members:

- IT Department
- General Maintenance Department
- Corporate Marketing and Relations Department
- Contracts & Purchasing Department
- Agriculture and Irrigation Department

Companies responsible for providing smart solutions

- Roads and Transport Authority
- Dubai Civil Aviation Authority

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
1/1/2018	01/10/2018

13. Impact and results

By integrating the Al Mamzar Park with various innovative technologies, Dubai Municipality was able to achieve great results. In addition to high customer satisfaction, which increased from 83% to 98%, and an increase in annual visitors to 1.5 million in 2019, it has been able to increase the quality of service level of 85% to 98%.

From the service perspective, it has been able to:

- Increase satisfaction with professional staff interface from 86% to 99%
- Increase satisfaction with the external appearance of 85% to 100%
- Increase events held in the park by 69%

Additionally, the following achievements were made:

- Increase compliance with the Dubai Code to 100%
- Achieve the mortality rate of 0%
- Reduce the incidence of drowning by 82%
- Reduce the cost of services by 54%
- Reduce agricultural maintenance cost by 19%
- Increase the agricultural surface area by 21%
- Increase the confidence level from 91% to 100%

14. Other implications

The Al Mamzar Smart Park was also recognized by the Sheikh Hamdan Award for Smart Government and endorsed by the Global Innovation Institute as a Tier 2 innovation.

Maqta Gateway

Abu Dhabi Ports

1. Description of the innovation

General information

Maqta Gateway® LLC came out as a result of an internal innovation process of Abu Dhabi Ports, which was co-designed with the customers through brainstorming sessions, as well as numerous interaction points and tests. In 2016, it evolved into a wholly owned subsidiary of Abu Dhabi Ports, the master developer of ports and industrial zones in Abu Dhabi. Maqta Gateway became a central pillar of the company's strategy to be a leader in the development of integrated, digital, global trade. It has served as a platform for innovation within the organisation, leveraging the Port Innovation Lab to support the development of innovative solutions and to serve as a space to interact with internal and external stakeholders.

Maqta Gateway is the developer and operator of the first Port Community System (PCS) in the United Arab Emirates, which evolved to the Single Window (Maqta PCS or mPCS), facilitating the exchange of goods and the movement of people, and contributing to the sustainable development of Abu Dhabi

mPCS came for the following purposes:

1. To address trade needs for high levels of predictability, visibility, reliability and data transparency
2. To facilitate trade, streamlined processes and operations within the community
3. In the long run, to achieve greater economic impact.
4. To ensure the availability of information and data to serve as an analytical tool to support further process improvements and decision-making.

It offers ports, exporters, importers, shipping lines, customs and government agencies a single point of contact and real time information at any time of the day. The services are also available via mobile, significantly enhancing processing times and communication procedures.

mPCS currently is operational in 5 ports, 54 private jetties, integrated with 20 shipping lines, and covers 100+ services from seaside to hinterland. It is the first solution in the Middle East to achieve PCS-to-PCS Integration and is integrated with 3 single windows and 11 ports in China, Belgium and Spain.

Other information

Throughout Maqta Gateway processes the customers/stakeholders are engaged in different phases of the product life cycle, from the conceptual phase until the operation phase:

1. Project initiation & requirement gathering: Brainstorming sessions are conducted with customers at initial phase and during the business requirement gathering to ensure that the solution is aligned with customer needs and to increase customer satisfaction.
2. Rollout, trainings, and pilots: Before releasing updates or new solutions/products, users are trained on how to use the system. User manual is developed for each product, and for some complex solutions, a pilot phase is conducted with 1-4 customers to ensure smooth transition.
3. Customer satisfaction surveys and studies: Multiple Surveys and studies are conducted to ensure that customer satisfaction, perception and the impact of the products & operation on the customer are collected and analyzed.
4. Customer site visits and communication: Throughout the account management process, Maqta account officers visit customers on a daily basis (3 visits a day, about 600 visits annually).
5. Customer events and awards: Multiple events are conducted with customers to present new products, award customers on their adoptions and interactions with the system, and ensure their feedback and suggestions are heard.
6. Customer suggestions: Throughout the trainings, site visits, meetings, and the happiness index service, Maqta Gateway collects customer feedback and suggestions (80% of the suggestions implemented as of 2018).
7. 7 signed MoUs with government entities: Abu Dhabi Food Control Authority, Ministry of Climate Change and Environment, Department of Finance- Customs, Abu Dhabi Global Market, Abu Dhabi Terminals, Abu Dhabi Airports, and Etihad Rail.

Abu Dhabi Ports developed the first Port Innovation Lab in the region, and is located within Maqta Gateway. The lab is responsible for developing innovative port solutions and services, and innovation sessions includes customers and partners for input.

MANARA was launched in 2017, as the first product developed in Maqta Gateway Port Innovation Lab. MANARA means 'lighthouse' in Arabic and symbolizes the ability to provide vital information to the shipping community in tracking and tracing vessels and cargo at the fingertips. The application brings together real-time information from different sources, such as operational timings and approval statuses, to a single point of access. This in return saves customers time, money and efforts that would otherwise be needed to contact several entities to inquire about statuses and to subscribe to different information providers. MANARA is estimated to have reduced operational cost for Maqta customers by 5% and improved transparency by 30%.

The company also offer the Advance Trade Logistic Platform (ATLP), a unified digital system that covers sea, air, and land trade services through a single window. The systems allows trade parties to use standardized information and documents with a single entry point to fulfil all import and export-related regulatory requirements and customs procedures.

Maqta also has a catalogue / service map containing all services.

There is also a notification feature in the platform for communication and sending alerts in case of transactions or to request a customer to take actions.

KSP is standalone freezone portal used for administrative and registration purposes. KSP and PCS have single sign use. The customer sees everything as a single site.

Additionally, Masaha offers a modern user experience for KIZAD (Khalifa Industrial Zone Abu Dhabi) customers to access all the information and services provided by KIZAD Services Platform.

SILSAL is a beta in-house blockchain in the experimentation stage.

The entire program has 20 entities integrated.

2. Objectives of the project

Main objectives

1. Ensure smooth transport and logistics operations involving Abu Dhabi ports, airports, railway networks and hinterland services (industrial zones).
2. Cover all modes of transports including air and rail (currently sea transportation is fully completed).
3. Connect with wider global supply chain communication platforms
4. Accelerating development and trade in the emirate
5. Increasing security and decreasing risks through increased transparency
6. Reducing paperwork, as well as administrative and processing times
7. Providing a single point of contact and real-time information at any time of the day and anywhere via mobile devices
8. Improve the customer journey to enable trading activities, in alignment with Abu Dhabi's Economic Vision to diversify the Emirate's economy
9. Maximize efficiency by standardizing processes and providing a unified platform for information flow between stakeholders, given the large number of stakeholders that exist with each adopting their own procedures and means of doing business
10. Support entities that do not possess information exchange systems

Specific Objectives (KPIs)

1. Increased productivity and processing speed:
   a. Reduction of Administrative Workload
   b. Reduction of physical trips
   c. Reduction of human errors through the re-use of information
2. Improvement in transparency
3. Cost reduction of equipment and personnel:
   a. Reduction of printed papers
   b. Contribution to the operational cost reduction
4. Customer Satisfaction Level increase

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Supports the adoption of AI, big data and other technologies to drive the advancement of the strategic sectors under the 'Technologies for Humanity' purpose.
2. Supports the development of smart ecosystems under the 'Technologies for Humanity' purpose.
3. Improved connectivity and integration through the better use of technologies under the 'Mobility' purpose.

4. Type of value created

- New service/ product
- Speed of delivery
- Quality of services
- Access to services
- Employee satisfaction
- Communications within organisation
- Customer satisfaction
- Process efficiency

5. Impact meter

- [x] Reduced negative impacts to the environment (e.g. reduce carbon emissions)
- [x] Reduced water / energy consumption
- [x] Increased the number of units of a good/service produced / delivered
- [x] Reduced the cost of goods/services (produced / delivered)

6. Budget

In-house

7. Development stage

Currently the Maqta Gateway is in the Implementation & Scaleup phase.

8. Ideation

Ideation process

1. Maqta Gateway started off as a project at Abu Dhabi Ports initiated by Dr. Noura, who is a young passionate Emirati leader with an academic background driven by global vision.
2. Abu Dhabi Digital Authority recognized the project, and eventually it took nine months to establish Maqta as a department under Abu Dhabi Ports, and less than two years to evolve into Maqta Gateway LLC.
3. Abu Dhabi Ports defined a 6-year roadmap for Maqta Gateway, aligned with the Emirate's Strategic Plan, in order to achieve a complete Digital Transformation. As-is analysis and evaluation of technology were conducted initially for project feasibility. High-level meetings and various workshops were conducted with stakeholders to ensure alignment and collaboration. Brainstorming sessions were conducted for requirement gathering.
4. A comprehensive benchmarking study was conducted with industry leaders, such as Singapore and Germany, to study best practices and identify opportunities for improvement. Many of the industry leaders developed IT solutions that only cover specific services and customers segments. Users might have to use different platforms to complete trade formalities, especially when dealing with different modes of transport. However, mPCS was planned to provide a complete logistics and trade facilitation solution, acting a single window (i.e. one point of contact). It brings under one umbrella all serveries for B2G, B2B and B2C for all modes of transport related to trade, which include sea, air and land. More importantly, it offers complete transparency for all information exchanged within the platform. The platform will not only address the challenges realized but will also provide opportunities for company growth and support the Emirate's Strategic Plan.

Today, Maqta Gateway employs more than 160 employees and it evolved to become a solution delivery house, with its main product being the port community system (mPCS), but also extending to other entities in trade and logistics.

9. Implementation

1. As for the implementation, various methods were followed such as: Scrum framework based on an agile methodology, and DevOps, which shortened the systems development life cycle and provided continuous delivery with high software quality.
2. During the scale-up phase, classroom style trainings are conducted before any product release to ensure smooth adoption by customers and stakeholders. On-site trainings at the customers' premises are also provided during the period following the release to ensure smooth initial operations. Continuous meetings are conducted periodically afterwards to obtain feedback is further improvements.
3. The system is built based on best practices, which enables it to be scaled and replicated on the international level. The company would generate revenues by charging customers for the service.
4. As a result of the launch, Abu Dhabi Ports was the first organisation in the GCC to become a member of the International Port Community Systems Association (IPCSA), a global body which promotes the highest possible standards in international port community system operators. As described by Mr. Alan Long, Former Chairman of IPCSA: "mPCS is a complete trade facilitation platform, extending beyond the port environment to include all modes of transport: air, road and future rail. It even extends beyond imports, exports and transhipment traffic to include hinterland logistics centres and industrial zones. Developing a completely new, mobile enabled system, it is indeed the first project worldwide of this nature and size."

Before the implementation of mPCS, there were several challenges:

1. In-processes and operations, frequent physical trips, presence of human errors and excessive usage of printed papers that posed a risk to sustainability and process efficiency
2. The journey faced a key challenge related to the system's development, as Abu Dhabi Ports wanted to develop the system in-house rather than purchasing it from a vendor due to the risk of exposing sensitive information to external parties. The system was eventually developed in-house.
3. Change management was a key factor for the project's success as the journey faced resistance from stakeholders due to the presence of an old mindset.
4. Each service provided by Maqta Gateway has a journey and implies a significant change as the previous models are redundant and outdated.
5. Certain stakeholders also faced challenges in adopting the new system due to their outdated digital infrastructure which relied on old equipment and machinery, and could not afford the proposed system.
6. Too many stakeholders with their own way of behaving in this ecosystem.
7. Service providers and consumer which were not interactive and efficient.

Future plans

1. Maqta Gateway services are now extended to air-cargo services, but are yet to cover railway services.
2. Maqta Gateway is working on developing and launching its own blockchain technology, called SILSAL.

10. Participants

- Department of Finance- Customs
- Abu Dhabi Food Control Authority
- Ministry of Climate Change and Environment
- Abu Dhabi Global Market
- Abu Dhabi Terminals
- Abu Dhabi Airports
- Etihad Rail
- Shipping Agents in Abu Dhabi

11. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
Dec, 2014	Dec, 2015 (First Phase) - Now in the 6th Phase

12. Impact and results

Below are the results of the Operational Key Performance Indicators (KPIs), which were defined for the initial stages, along with the achieved results, based on end-users' surveys:

1. Increased productivity and processing speed:
   a. Reduction of Administrative Workload (48%)
   b. Reduction of physical trips (41%)
   c. Reduction of human errors through y the re-use of information (54%)
2. Improvement in transparency (51%)
3. Cost reduction of equipment and personnel:
   a. Reduction of printed papers (39%)
   b. Contribution to the operational cost reduction (20%)

Since the beginning of MG operations in 2015-2018, it has contributed to estimated savings (based on Abu Dhabi Digital Authority reports):

- AED 421 million (for customers and stakeholders)
- 76.8 k man-days
- 3.75 million physical visits
- 27.3 tons of CO2 reduction
- 41 million printed paper copies

Other achievements include

- Developing +100 services in less than one year (First Stage)
- Becoming a standalone company in less than 2 years
- Establishing internal innovation function to oversee and foster innovation

13. Other implications

Since inception, Abu Dhabi Ports and Maqta Gateway have received several accolades and achievements for mPCS, including:

- Technology & Innovations Award-Maritime Standard Awards 2016
- 1st Port Digital Innovation Lab in the Middle East
- Mafnood Excellence Award 2016- Technical Project Category
- Mafnood Excellence Award 2016- Leadership Award
- Key role in Abu Dhabi Excellence Program (ADEP) 2017 wining Outstanding Government Entity, Abu Dhabi Plan and Best Service Awards
- Maqta Gateway played a key role in Abu Dhabi Ports obtaining the ISO 900 certification for Quality Management System in 2017
- Innovative Technology Award- International Bulk Journal (IBJ) 2018
- Entrepreneur of the year- International Bulk Journal (IBJ) 2018 Dr. Noura because of the project
- Technical Innovation Award- Seatrade Maritime Awards 2018
- Integration of woman in the Maritime Sector Award - Seatrade Maritime Awards 2018
- Mafnood Excellence Award 2018- Best Executive Director, Best Administrative Support Employee, Best Excellence Team, Best Joint Service and Best Unit in Implementing Innovations.
- International Association of Ports and Harbors (IAPH) Sustainability Awards 2019: Resilient Infrastructure (mPCS Project) The only winners from UAE of this Award. Sustainability and Innovation Maqta specific
- Emirates Women Award 2019- Professional Category (Leadership) 2019
- Seatrade Awards 2019- The Young Personality of the Year 2019
- Digital Transformation (Bronze Award)- International Customer Experience Awards 2019
- Best Digital Strategy (Silver Award)- International Customer Experience Awards 2019
- IT Solutions Award- International Bulk Journal 2019

دائـــرة الـــنـــقـــل
DEPARTMENT OF TRANSPORT

STEAM

Department of Municipalities and Transport

1. Description of the innovation

Transport investments generally require a large amount of government funds. In order to make more informed, objective and data-driven decisions, the Abu Dhabi Department of Municipalities and Transport (DMT) built a tool (STEAM) that simulates and helps plan for the future of Transport in Abu Dhabi Emirate.

The DMT's Strategic Transportation Evaluation and Assessment Model (STEAM) is a sophisticated multi-modal travel demand tool that uses AI and Big Data analytics to support the decision-making process in the Emirate. The model uses demographic and economic information in addition to numerous sources of data from surveys, traffic systems and external stakeholders.

In general, people and their travel data are captured in one place to create a complex mathematical model that reflects the current conditions and forecasts future travel patterns.

STEAM is the official tool for Abu Dhabi Emirate to make informed decisions about land use development, the transportation system and transport policy changes. It is able to model travel demand patterns across the transportation system for any combination of scenarios in the forecast horizon years (2020,2025,2030 & 2040).

STEAM is used by many internal and external stakeholders to study infrastructure requirements. This tool has been successfully used to test over 60 Billion AED worth of schemes, policies and initiatives (e.g. whether and when to expand a road, build a tunnel, implement a toll, or build a metro).

The DMT's vision is to deliver an Integrated and sustainable transport for a better quality of life for the Emirate of Abu Dhabi. STEAM is a sophisticated and dynamic tool to help achieve this vision.

The Steam Model is a Statistical Inference tool that uses person behavior properties to predict future transport usage, including:

1. How many trips are generated from each type of land use.
2. Destination choice, e.g. where do people travel from to visit a new shopping mall.
3. Which mode of travel people choose Car, Taxi, Bus, Rail, Walk, Bike etc.
4. Time of day that people choose to travel to each destination type.
5. Route choice for particular trip trails to get from point A to point B.

The model comprises of over 140,000 lines of code and is built using a variety of statistical models (Logit, Linear Regression, and constrained convex optimization algorithms). These algorithms require many parameters that are obtained from processing large data sets from multiple providers and in multiple formats, using a variety of tools:

1. Machine learning/AI methodologies - For Example 40+ Billion records have been processed from Taxi GPS data to
    a. Infer Pickup and Drop Off
    b. Unoccupied Taxi Trips
    c. Average Link Travel Speed
    d. Pickup/Drop Density Plots
    e. Time of Day Choice
2. 30,000+ surveys and household interview records have been processed to generate a segmentation to model travel choice. Complex data analytics techniques have been undertaken to extract the parameters required for distribution, model choice and route choice.

    The model is based on the Industry Standard 4 Step transport modelling approach, which has been enhanced to include a variety of local specific transport related modules that include:

    a. Airport Model (All Airports in the Emirate and an airport competition model with Dubai)
    b. Freight Models
    c. Sea Port Model
    d. Tourism
    e. Special Trip Generators (Oil/Gas)

2. Objectives of the innovation

Main objective

The STEAM model's primary objective is to support the Plan Abu Dhabi and act as a decision support tool for all Transport Investments in the Emirate.

Other objectives

As the official travel demand forecasting tool for the Emirate of Abu Dhabi, the objectives of developing the STEAM model include:

1. Understand the impact of various transport policies and help the decision makers formulate future strategic policies to best utilize the transport infrastructure. To provide the leadership with understanding of the impact of implementing tolls, increasing parking fees, congestion pricing, applying new emission standards or vehicle age restrictions, supported by objective assessment.
2. Evaluate the need of transport infrastructure schemes and develop a phasing plan. Transport planners rely on this tool to continuously evaluate various road schemes and confirm the requirements prior to implementation, whether it is for a new by-pass road, a bridge or a tunnel, or land widening across a freeway, or a new access road into a development.
3. Assess and support the decisions about future land use changes. Travel patterns vary as land use changes occur in the future, so the tool helps the city planners understand the impact and requirements of a new residential community, an employment hub or an entertainment zone.
4. Official tool that consistently and fairly evaluates the impact of developer's proposals and helps in review and approval of the Master Plans.
5. The objectives of the tool are also to see the overall impact of population growth across the Emirate as well as surrounding Emirates and cross-border traffic.
6. The model is also built with an objective to be flexible to incorporate new modes of transport technology that may surface in the future, understand their feasibility and effectiveness.
7. Ability to undertake economic analysis and feasibility studies to formulate scheme prioritization and provide overall cost effectiveness indicators to decision makers.

3. Link to the National Advanced Innovation Strategy (NAIS)

1. Contributing to UAE's ambitious goal of having Global Impact enabling "Agile Government", and "Advanced Economy" as main aspects.
2. Aligned to the human-centric purposes through the 'Technology for Humanity' component by adopting advanced technologies, such as artificial intelligence and big data.
3. Aligned with the 'Mobility' purpose by providing a support tool to plan for the infrastructure of the future, accounting for upcoming transport modes, such as autonomous vehicles, drones, etc.

4. Type of value created

- ✓ New service/ product
- ✓ Speed of delivery
- ✓ Quality of services
- ✓ Access to services
- ✓ Customer satisfaction
- ✓ Process efficiency

5. Impact meter

- ✓ Increased the quality of life of citizens / residents
- ✓ Reduced negative impacts to the environment (e.g. reduce carbon emissions)

6. Budget

14,000,000 AED - Version 1

14,000,000 AED - Version 2

7. Development stage

The innovation is currently in the scaleup and support phase.

The STEAM model is continually being updated to include several new features and enhance the user experience:

1. The model is typically updated and maintained by the team at DMT and a model is at minimum released for external use every 12 months, but the model is updated internally for special studies released every 6 months.
2. New transport technologies such as E-Bikes / E-scooters, autonomous vehicles, mobility as a service, Ekar / UDrive are now being incorporated into the STEAM model to make it future ready

3. Visualization platform has been developed to make the outputs from the model easily accessible to planners and non-technical users of the model. Although visualizations are not new, this is the 1st Web Based platform to be developed in the GCC for a travel demand model, providing non-modelling experts access to rich datasets to provide them with additional information for either decision making, engineering design and planning insights.
4. Vehicle fleet and emissions forecasting modules are being added to the model to understand the fleet rollover, impact on car ownership, future vehicle operating cost impact, policy testing on vehicle age, emission standards and incentives.
5. Utilization of Etisalat mobile data to provide a continuous stream of data to enhance accuracy of the model. This is, to the knowledge of the team, the 1st time when mobile data is used in this manner in the GCC, while its implementation in Europe and the US has already become common. The DMT aim to become the 1st Government entity to enhance their travel demand model with mobile data and, therefore, increase the sample rate from 2% to above 70%.
6. Infer additional behavioral properties of population using the transport system. Due to the scale of the data and additional information that can be extracted from it, additional deep learning methodologies are being developed to provide meaningful insights of observed and forecasted travel behaviors.

8. Ideation

A transport model is a central decision-making tool for all transport agencies worldwide. The DMT have taken this concept further to provide a centralized decision-making tool that is a common platform for all development and Infrastructure decision making in the emirate of Abu Dhabi. The team has undertaken considerable research on international best practices and used it in the original development of the model in 2009-2011.

The model has undertaken continual improvement over the years, these improvements have been based on feedback from the local model user group meetings, multiple peer review and feedback from stakeholders on how the model's capability should be enhanced. With each review, the modelling team reviewed and prioritized the improvements to ensure that the key capabilities were included for the upcoming model release.

Each year feedback sessions are held with the model users. The theme for the December 2018 user group was to reduce the model run time. During the feedback session details of the newly released model are presented and clarified.

9. Acceleration

The DMT had taken over an existing travel demand model in 2008, but after the initial review, the model was highlighted to have some gaps in functionality.

The model was reviewed in detail and recommendations were made to update the model to be a comprehensive tool to assess all aspect of land transport as set out in the new law for the DoT in 2008. During the initial phase, an internal exercise was undertaken to assess the possible software platforms, how other transport agencies worldwide undertook their surface transport modelling. Once this phase was completed, the project scope was presented to the management for approval and a consultant was appointed to build the model in 2009. The model was focused on the core or critical use cases as per the DMT law such as the surface transport masterplans (STMPS) for the 3 regions (Abu Dhabi, Al Ain and Al Dhafra), assessment of Transport Master Plans (Developer Proposals), assessment of new infrastructure (Roads, Rail, Bus) and Policy Measures (Parking, Tolls).

In 2009, a comprehensive survey program was completed to understand the travel behaviors of all population segments of the emirate of Abu Dhabi and these surveys were processed for the use in the travel demand model. During the development phase of the initial model key gateways were set which included expert peer reviews at relevant stages to ensure that the model was being built in accordance with international best practices and the internal DMT team was monitoring each phase closely to include all relevant tools in the model that were required.

Also, during the development phase, key stakeholder liaison was undertaken to obtain feedback from all potential model users, including what they expected from the model in terms of outputs and the assessment tool.

On completion of the model, an independent per review was conducted, which concluded that the model followed international best practices and it was superior in many areas.

In 2014, it was presented to DMT management that it would be a best practice to update the model every 5 years to ensure that it generally reflects reality. This was also further justified as Abu Dhabi had 5 years of considerable growth and changes in travel behaviors. These changes in both transport and demographics needed to be captured and included in the model. The DMT management approved the major model update project.

The 2015 major model update project followed the same principals as the 1st model, but a wider stakeholder group was consulted to capture and enhance the usage of the model for other government entities, such as the Environment Agency as they required further details on transport related environment impacts. The project covered data collection, model updates, stakeholder enhancements and model enhancements.

On completion of the update of the STEAM model, further peer reviews were undertaken, and it was concluded that the model still followed the latest international best practice guidance and was still superior to many other models of its type.

The cost for the run time enhancement innovation and the initial inclusion of Big Data in 2019 had no external cost to DMT, the work was completed by the DMT Specialist Model Development Staff. Due to the complex nature and the extensive utilization of the model, the DMT has a small team of transport demand modelers to maintain the model and to undertake internal studies to support the DMT Leadership team, other DMT teams and the wider stakeholder group of up to 100+ model users worldwide on typically 50-60 project annually.

Scenario A 2020

LULU ISLAND

AL SUWWAH

AL REEM

CBD

MARINA VILLAGE

INNER ISLANDS

ABU DHABI ISLAND

HUDAYRIAT ISLAND

GRAND MOSQUE DISTRICT

accross 4 ma
corridors

21 km/h
Average
Vehicle spee
in the CBD

18 min
Average
vehicle journ
time across
main corrido

35.0 %
CBD public
transport mo
share

55.7 Bn.
Capex

of
olds

10. Implementation

The STEAM model was approved for release only when the model validation has reached quality standards set out by the international best practice guidance (e.g. UK DfT TAG). This validation is undertaken for each stage in the model. The model validation is done by independent experts on the peer review team, DMT staff and stakeholders. Once the model is accepted by the stakeholder group, the results are presented to the DMT management for approval for release.

On the initial release of the model, the DMT chairman H.E Abdallah Al Otaiba issued a decree that the STEAM model was the official travel demand forecasting model for the Emirate of Abu Dhabi.

When the model was updated and validated on projects in 2009 and 2015, the DMT modelling team took over the maintenance and development of the model internally. Each 6-12 months, DMT releases 1 public release and 2 internal releases. These releases focus on the feedback received from model users collected via email and during DMT annual user group meetings. The yearly release cycle follows established internal QA/QC procedures during the model release. Prior the model releases, the model is presented to the executive director for approval.

11. Participants

The DMT Modelling Team supports a wide range of stakeholders to undertake the assessment of the project or by assisting consultants in completing transport related studies.

Abu Dhabi Government entities - including but not limited to

GSEC	Municipalities
Etihad Rail	AD Police
Department of Energy	Environment Agency Abu Dhabi
Federal Transport Authority	SCAD

- Multiple Teams at the Department of Municipalities and Transport (Aviation, Maritime, Roads, Planning, Real Estate Planning, Undersecretary Office, Chairman's office)
- 25+ engineering consultants.
- Real estate Developers (e.g. Aldar, MODON, Mubadala, Bunya, IMKAN)

12. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
June 2009	June 2011 (The first model release)

13. Impact and results

STEAM Overall

The STEAM model has been used for 10 years in the Emirate of Abu Dhabi and has been used to assess and priortise the capital expenditure on infrastructure schemes in Abu Dhabi. In addition, with each real estate development, STEAM is used to predict the impact of the developments on the surrounding transport network. Once the prediction is completed, the model is used to provide information to the highway/traffic engineers to design a cost-effective scheme suitable to sustain access for the development for the next 15-20 years. Major 15-20-year plans, such as the regional surface transport master plans, are all developed using the model. This includes full economic analysis of all combined police and infrastructure measures to quantify transport related economic impact.

More recently, a detailed study was completed to fully understand the impact of implementing a proposed toll system in Abu Dhabi. The impact looked at such aspects as the reduction of traffic flows, mode choice to PT and socio-economic impacts. The model was used to identify the key times for road charging to maximize congestion reduction while minimizing socio-economic impacts. The conclusion was to charge only a maximum of 4 hours during weekdays.

Specific to the Runtime Innovation

The reduction in run time has had a direct positive impact on all internal and external studies. The run time reduction has enabled faster assessment of studies, either by providing results faster to decision makers, reducing the cost of the work, or by allowing additional schemes tests to be completed in the same amount of time, providing more confidence to decision makers in the possible outcomes of the schemes.

In conclusion, the STEAM model is central to decision making for all transport infrastructure projects in Abu Dhabi. The model has enabled the leadership to test multiple schemes and see the predicted impact on the transport network, supporting decisions with a cost of many millions of dirhams.

Summary of benefits

1. Improving customer and stakeholder satisfaction +90%
2. Scenario run time saving 61%
3. STEAM supports more than 1,000 studies/scenarios per year
    a. STEAM Model Output Requests: Application 85 / Target 14 days / Achieved 100%
    b. Model Runs: Internal 493 / External 357 / Successful Runs 956
    c. STEAM Model Access Requests: Application 45 / Target 7 days / Achieved 113%

Other achievements

1. The latest improvement reduced the model's operating time from 50 hours to less than 25 hours.
2. By anticipating future congestion, bottle necks and optimizing our transit network, STEAM helps decrease fuel consumption, emissions as well as travel time. This has an impact on citizens, residents as well as the overall economy.

14. Other implications

Awards

- "Innovation in Government" Gov Award 2017
- "Best Technical Project" Abu Dhabi Excellence Award 2015
- "Best Technical Project" DoT Excellence Award_ Abu Dhabi 2014
- "Excellence in GIS Implementation Award" GISWORX & ESRI Dubai 2012

The Hive

Abu Dhabi National Exhibition Centre (ADNEC)

1. Description of the innovation

The Hive Labs is a space which is comprised of the 80 seat Collabotorium©, offering participants endless options on how to intuitively configure themselves into appropriate sized groups, a variety of custom built pods and huts, 3 meeting rooms which offer varying degrees of privacy if required – as well as a suite of 3 'white' rooms across the hall for breakouts.

Aside from the physical environment, the Hive prompted the development of the ADNEC Meeting Format Directory. This directory summarises how and when to use certain styles of unconventional conferencing techniques with a desired outcome in mind and further reinforces the commitment of the venue to assist clients in having more collaborative events.

Background and rationale of the innovation

Several factors subconsciously have a positive influence on the participant's mindset to a more energetic, positive and creative position. Amongst these factors are: room dimensions, shape and colour of furniture, the colour choices, the quality of artificial light, availability of natural light, food, aroma and natural planting.

Once within the room, participants find themselves naturally feeling more energised, the first step to creating the comfort zone to start contributing. Thereafter, movement is encouraged to maximise forced 'collisions' between participants. In direct contrast to the traditional notion of coffee breaks, participants are 'invited' at all times to graze at the internal all day 'grab and go' brainfood deli.

The innovation is underpinned by academically proven research, that knowledge retention can be increased by a factor of 10X, if attendees at events are contributing rather than being lectured to.

Technology, including access to the Slido app, has been carefully selected to be at the same time high impact but also to encourage anonymous participation and ability to set the agenda whilst the event is live.

Additionally, ADNEC's sales and operational teams have all been trained on the theory and benefits of disruptive meeting formats to guide ADNEC's clients into potentially unfamiliar but beneficial territory.

The key difference between the traditional venues is in the delivery. ADNEC is assuming a consultative approach to enhance the end user (participant) experience, by assigning a dedicated 'Experience Manager' to play the combined role of event planner, concierge and innovation champion. This approach brings us closer to truly working in partnership with clients, enabling us to anticipate further trends in order to develop the core innovation.

2. Objectives of the project

Main objective

For ADNEC to respond to a demand for 'meaningful meetings' from audiences who do wish to attend face to face events but with an increasingly request for a different experience whereby they can actively contribute, present their own problems to seek solutions with like-minded delegates, meet the speakers and help set the agenda for the event.

Other objectives

The purpose is to create an environment that encourages more dialogue, discussion and debate within meetings in the knowledge that this enriches the learning and experience from attending face to face events.

The Hive has been developed in an effort to allow the venue to work closely with clients to trial a new style of meeting environment with the goal of maximising and enhancing the outputs from their events, and to offer participants at their events a richer, more impactful and lasting experience.

Thus, the major objectives were:

1. To maximise and enhance the outputs from their events,
2. To offer participants at their events a richer, more impactful and lasting experience
3. To position ADNEC as the innovation centre of the Capital
4. To differentiate ADNEC within the corporate market

3. Link to the National Advanced Innovation Strategy (NAIS)

Support the 'Education and Future Skills' purpose by utilising research and latest techniques in delivering

4. Type of value created

- New service/ product
- Quality of services
- Communications within organisation
- Customer satisfaction

5. Impact meter

- Increased the number of units of a good/service produced / delivered

6. Ideation

During the 18 months from ideation to opening of the Hive, much time was spent exploring the multitude of environmental factors which assist in; firstly, setting a creative mindset and thereafter encouraging attendees to become participants.

The Hive project is an output of ADNEC's clearly defined Innovation Strategy, whereby staff are trained in the principals of design thinking. ADNEC's commitment to embedding Innovation into the daily operation of the business saw the development of a small Innovation Lab – a space for ADNEC staff to develop the theory of design thinking into actual projects to be implemented across all aspects of the business' operations.

This creatively designed Innovation Lab immediately revealed that meetings in two different spaces felt different. It was observed that more people spoke, people spoke more often, they were less distracted by mobile phones, less people left the room and lingered longer at the end of sessions and generally the experience felt significantly more enjoyable, energetic and impactful than meetings in more traditional environments.

This directly led to the proposal to study how a venue could positively impact the output of events. The proposal was challenged via the steps of, validation, research and refinement.

The validation phase was critical as potential end users were invited to challenge the original hypothesis. This was enabled by inviting clients to conduct events within ADNEC's staff Innovation Lab (a minimal viable product) and allow the Hive project team to observe and measure behaviours and then conduct interviews to gain a deeper understanding of the experience.

7. Implementation

Upon management approval, a project team was created, and the project delivered. This included the development of a stand-alone business plan which included KPIs, a risk register and project charter.

The design was refined numerous times with multiple working parties across the organisation and client reference before being finalised and the build phase commencing.

Benefits of cross functional working parties. Participants from across internal departments were involved in the original concept group; sales, media, event planning, exhibition sales, marketing which enabled a 360 approach to the creative and practical delivery elements of the project. Furthermore, other departments such as FM, Risk Management, Senior Management, In-house AV/Production, catering, HR and Venue Operations collaborated on project delivery.

8. Start and end date

Start date (from the ideation phase)	End date (to the implementation phase)
2017 - Ideation and validation (summer) 2017 – approval (September)	2019 – opening (1 January)

9. Impact and results (to March 2020)

Since its launch, the Hive has opened a totally new dialogue with clients where the venue is actively contributing to making events better.

1. The Hive has introduced many new clients to ADNEC from the corporate and government entity sector in particular. In addition, every previously confirmed association conference have added The Hive to its tenancy. The Hive has also drawn business previously placed in hotels.
2. Revenue & Utilisation. In less than 4 months, 57% of the annual revenue projection has been achieved. Current annual projects suggest targets will be exceeded by 71% towards the year end. Utilisation of the Hive since opening is 81% of available days in contrast to 43% utilisation of ADNEC's existing breakout rooms.

3. New Business. The Hive has hosted new clients such as the United Nations, Masdar, UAE Ministry of Youth, Department of Energy, Department of Finance, Microsoft and the Special Olympics.
4. Enquiries. Enquiry levels are significantly higher than existing meeting spaces and have come from blue chip clients such as KPMG and Porsche.
5. Testimonials.
    a. "Today we were the first people to try the Hive at ADNEC, and it was an amazing experience. We have had a full-day workshop from presentations to breakout sessions and brainstorming. It helped the attendees to unleash their creativity and work productively." - Sheikha Al Hosaini, Senior Officer/Youth Initiatives Masdar
    b. "I have had first-hand experience of The Hive and I'm honestly so impressed of this new space and, more significantly, about ADNEC being at the forefront of delivering a new and innovative space for the MICE industry.

       My experience gives me the opportunity of visiting many venues around the world, and I can say that most venues don't even know the need to do something – some know that they should do something but don't know what – but ADNEC has delivered an innovative and creative space in an attempt to be at the forefront of venue development and futureproofing the venue for the changing world ahead." - Enrico Gallerini, CEO, GRS Research and Strategy.

10. Other implications

The development of the Hive has been the foundation for a new concept in ADNEC's internal innovation project, Future Foresight: "Creative Meeting Spaces". This extension of the original project currently covers the following 8 areas:

1. Expansion of the Hive brand
2. Development of modular Hive components to offer within event spaces and especially pre function and concourse locations
3. Conception of a content data centre to enrich participant experience
4. Continued development of the Meeting Formats directory and investment in the equipment to provide this to clients
5. Potential repurposing of space for co-working / incubator for lean startups
6. Development of A2 (ADNEC Advisory)
7. Technology showroom to trial new tech to support meetings and events
8. Development of Augmented Reality 'Objective Led Event Configurator' technology

مركز محمد بن راشد
للابتكار الحكومي
MOHAMMED BIN RASHID CENTRE
FOR GOVERNMENT INNOVATION

ابتكر
IBTEKR

SIAPARTNERS

This report was developed in partnership with Sia Partners that is a consulting firm focused on delivering superior value and tangible results to its clients as they navigate the digital revolution. With over 1,650 consultants in 17 countries, Sia has a great expertise in more than 30 sectors and services including Government Strategy and Innovation, being one of its main business lines.