SIREN
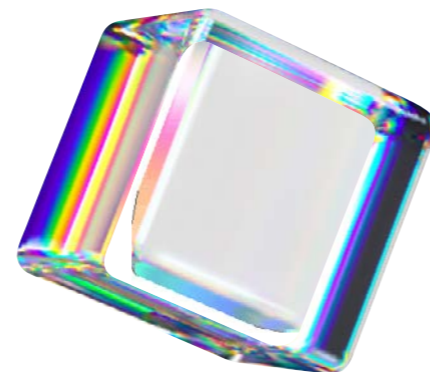## ANALYTICS

Transformation, wherever you stand

March 2024
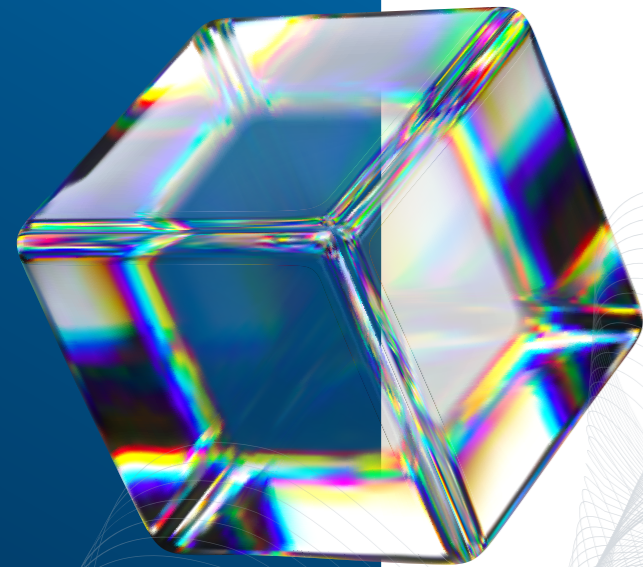
Your partner in DIGITAL TRANSFORMATION

INTRODUCTION

Siren Analytics is a full-service digital change agency that helps organisations accelerate their digital transformation journey. We blend holistic change management support with cost efficient technologies so our partners become more responsive, efficient and impactful. We are a joint venture between CME, a multinational company providing digital services to Fortune 1000 companies, and Siren Associates, a change management advisory that has been reshaping the public sector across the Middle East for over a decade.

600+
software and hardware engineers

70+
researchers, subject matter experts and change management consultants

15+ years
of public sector transformation consulting

40 years
of trusted tech consulting for the private and public sectors

9
locations around the globe

80M+
Users cumulatively served in the private sector

SIREN
ANALYTICS

WHY PARTNER WITH US?

We help organisations achieve lasting results by supporting them to take a system-wide look at their reality and craft targeted strategies for change.

Whether you are looking to cut costs, enhance service delivery or identify new revenue streams, we can help reimagine your business. Our teams will work alongside yours to develop and refine solutions that enable your organisation to quickly overcome pain points and seize emerging opportunities.

Because complex landscapes move fast, we always make sure to embed the skills needed to rise to the next challenge within your organisation.
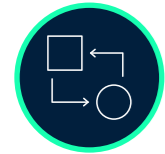
Multidisciplinary
Our multidisciplinary team comprises both technical and non-technical staff, allowing us to ask the right questions, probe all assumptions, and reframe each problem with fresh eyes.

Client-centred
Our solutions are collaboratively designed around the unique needs of each client, driven by systems-thinking and delivered with agility.

Problem-solving
We help our partners navigate complexity with clarity, drawing on our global experience working with the private sector and governments, including in low-resource environments.

Multilingual
Our team is fluent in Arabic, French, and English, enabling us to serve a global client base while ensuring nothing is lost in translation.

Comprehensive
We cover all bases. From strategic planning through to software development and change management, we catalyse change for long-term organisational growth.

Siren is committed to maintaining high data protection, privacy and security standards.

Confidentiality
Data remains confidential and secured against unauthorised disclosure.

Integrity
Data remains whole and unaltered.

Availability
Data remains accessible to authorised persons for business or customer use.

Data Ethics
We embed data privacy and security by design in our digital solutions.

EU GDPR COMPLIANT · COMPLIANT · COMPLIANT · COMPLIANT

ISO 20000-1 — Information Technology Service Management System

ISO 9001 — Quality Management System

ISO 27001 — Information Security Management System

ISO 27000 — Information Security Management System

SOME OF OUR PROJECTS HAVE TRANSFORMED THE PUBLIC AND SOCIAL SECTORS...

IMPACT

The first e-governance platform in Lebanon, connecting more than 20 ministries, 1,000 municipalities and 1,500 mukhtars.

COVAX

Rolling-out the COVID-19 vaccine to more than 2.6M residents in Lebanon in a fair and transparent process, facilitating a pandemic response that saved an estimated 6,000 lives.

DAEM

Mapping more than 583K financially vulnerable households, and channeling more than $175M in cash aid to 100k qualifying households.

FENIX

A bespoke digital tool enabling efficient, intelligence-driven resource use in the security sector, and multi-level interoperability.
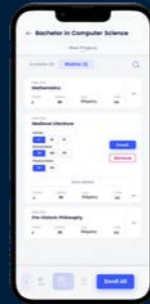
DIGITAL SERVICES

E-services projects for Ministries and regulatory institutions in the MENA region:

- Making government services more efficient and accessible
- Promoting interoperability and citizen engagement

SIS

A modern, purpose-built student information system that delivers comprehensive services for education institutions, linking to central authorities for regulation.

DALIL

An AI-powered web platform that simplifies and streamlines media monitoring and verification.

- Automated monitoring of 400+ MENA focused media outlets
- Clustering of articles by topic and volume
- 12+ proprietary and open-source tools for evaluating the reliability of images, videos and text.
- Project deployed across 9 countries

SHOWCASED PROJECT 2023 PARIS PEACE FORUM

OUR TRANSFORMATION TOOLKIT

Our mutually-reinforcing services support our partners across the organisational transformation value chain. Together, they strengthen individual and organisational capacities, while building ownership and creating an enabling environment for sustainable change.
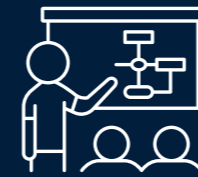
RESEARCH AND DATA ANALYTICS

We help organisations identify user needs and derive insights from operational data to inform operating model and service design

DIGITAL STRATEGY

We help organisations create a dynamic digital ecosystem that ensures they remain competitive, responsive and citizen-centric into the future

PARTNERSHIPS AND STAKEHOLDER COLLABORATION

We help create and nurture strategic alliances to help organisations remain competitive and responsive to the needs of their communities

PROCESS OPTIMISATION

We help organisations streamline and enhance their processes to deliver services more efficiently and effectively, improving end-user experience

HUMAN RESOURCES OPTIMISATION

We help organisations equip their workforce with a the right digital capabilities, deploy resources effectively and build fit-for-purpose teams

DATA STRATEGY AND LIFECYCLE MANAGEMENT

We help organisations extract maximum value from their data to support informed decision making about how to improve services and operations

AI AND MACHINE LEARNING

We help organisations to become more responsive and agile by using AI and ML to streamline processes, enhance services and anticipate future needs

USER-CENTRED INFRASTRUCTURE

We help organisations do their job effectively by managing the design, building and renovation of modern facilities and infrastructure

AI AUGMENTATION AS STANDARD

Artificial intelligence is transforming business. From disinformation detection to face recognition, organisations are creatively applying AI to unlock opportunities for growth.

Siren has in-house capabilities to bring you the latest technologies in a package that makes sense to you and that aligns with your vision and goals. We will work with your teams to identify how AI can help them become more productive, capable and effective. Then, we will collaboratively develop intelligent, intuitive and user-friendly solutions to support those objectives.

AI SEMANTIC SEARCH ENGINE

- Understand the searcher's intent and the contextual meaning of the query to deliver more relevant, accurate results
- Scalable and easy to use API
- Search up to 1 Billion documents in < 1 second
- Desired answer is in the top-ten results 94% of the time

  - *Search up to 1 Billion documents in < 1 second*
  - *Desired answer is in the top-ten results 94% of the time*

NATURAL LANGUAGE PROCESSING

- Offensive language, disinformation and hate-speech detection
- Sentiment analysis
- Chatbots and question answering
- Named-entity extraction and text summarisation
- Custom unsupervised model training & adaptation

  - *Top scoring system 2021 (KAUST Arabic Sentiment Analysis)*
  - *75% exact match (Wikipedia question answering)*
  - *Ranked second (OSCAT 2020 offensive language detection task)*

OPTICAL CHARACTER RECOGNITION ENGINE

- Extract text from documents of any format or structure
- Face recognition and liveness check
- Automatic alignment of mis-aligned documents
- Fully integrated with our Search Engine solution

MEDIA MONITORING AND ANALYSIS

- Scraping and content clustering
- Custom dashboards, monitoring & notifications
- Sentiment analysis
- Bot detection
- Network graph clustering

FOSTERING COLLABORATION AND COORDINATION IN CRISIS RESPONSE AND STATE DEVELOPMENT

CLIENT'S CHALLENGE

Lebanon's public sector has long grappled with fragmentation, obsolete processes and a general culture of opacity. Coordination and policy coherence are undermined by overlapping or conflicting responsibilities between authorities, making it difficult to address complex problems, and causing accountability and oversight issues. Engrained state capture also hinders collaboration and coordination by disincentivising officials to work in the public interest. The urgency of addressing this came to the fore in 2020, when Lebanon was hit by economic collapse and the COVID-19 pandemic, both of which demanded a joined-up, multi-stakeholder response, effective oversight, and strong citizen engagement.

APPROACH

Siren helped the Lebanese state promote multi-stakeholder coordination and collaboration by strengthening oversight mechanisms and introducing cloud-based collaboration tools that enable the delivery of Cross-sectoral services services requiring multiple verifications, validations, or approvals.


- **Cloud-based collaboration tools:** Siren created a digital platform called IMPACT that brought relevant stakeholders together in comprehensive workflows that allowed multi-directional communication and the sharing of data for decision-making. This streamlined bureaucratic processes and eliminated unnecessary delays. Officials' discretionary powers were limited by assigning them roles in automated workflows and processes. Dedicated portals facilitated citizen access to services and enabled non-governmental organisations to work with the government on service delivery. To promote uptake, Siren trained relevant public sector staff in how to use the platform's tools in their daily tasks, and conducted mass communication campaigns to educate the public about the sectoral portals.

- **Strengthening oversight:** IMPACT empowered Lebanon's primary oversight agency, Central Inspection, to carry out its job effectively by providing it with real-time data to
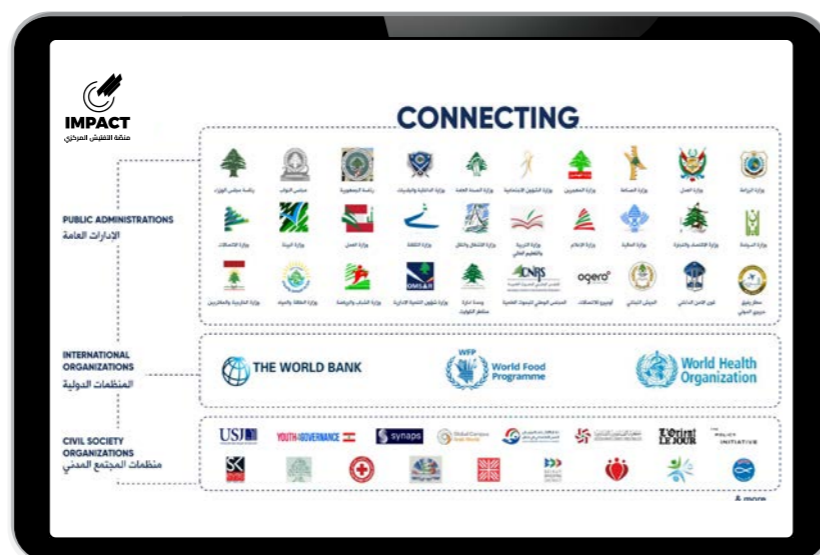
audit the public sector. Siren additionally trained Central Inspection staff on data-driven audit methodologies. IMPACT thus acted as a force multiplier for an agency long deprived of sufficient human and material resources. To engage citizens in oversight, Siren worked with the government and Central Inspection to make relevant public data available and easily accessible on an open-data site. Feedback, reporting and whistleblowing mechanisms were also created through which citizens could channel their concerns and complaints.
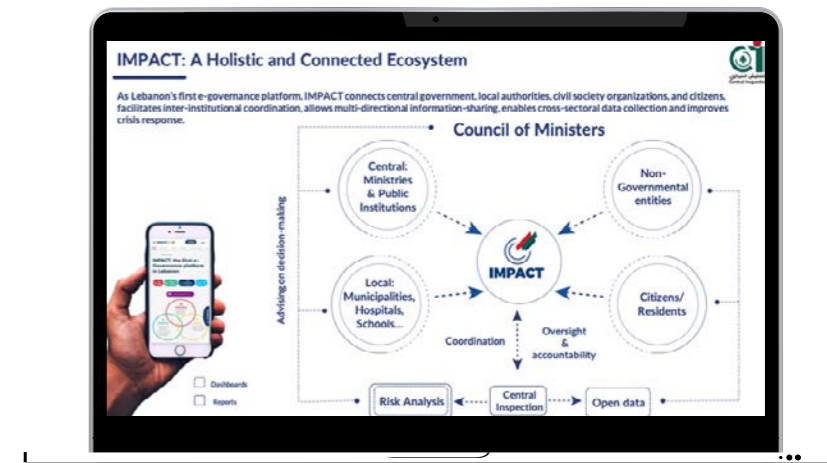
OUTCOMES

As the COVID-19 pandemic and economic downturn unfolded, IMPACT offered innovative modules to aid crisis management and governance. The Lebanese government used these modules to coordinate fair and transparent vaccination campaigns and social safety net provision. The platform has significantly driven inter-agency collaboration and pushed traditionally antagonistic state institutions together to collaborate on issues of national importance.

Collaboration

- User base of **20 ministries, 1,077 municipalities, and 1,500 mukhtars**
- **110+ public entities** digitally audited by Central Inspection
- **100+ NGOs** supported offline registration processes for sectoral digital services
- **10+ CSOs** participated in the design, implementation and audit of various IMPACT modules

Social protection

- **580,000 households** applied via IMPACT
- **$177+ million cash** assistance delivered to-date

Public health

- **15 million mobility permit** requests submitted during lockdown
- **2.5 million individuals vaccinated** with 1 or more doses
- **IMPACT-issued vaccine e-certificate** recognised in the European Union's Digital COVID Certificate system
- **6,330 lives** estimated to have been saved as a result of the lockdown and vaccination measures, both digitised on IMPACT

Recognition

THE LEBANESE ORDER OF MERIT
Issued by Presidential Decree 10565/2022.

IESE CERTIFICATE OF EXCELLENCE FOR PUBLIC SECTOR TRANSFORMATION AWARDS IN 2023.
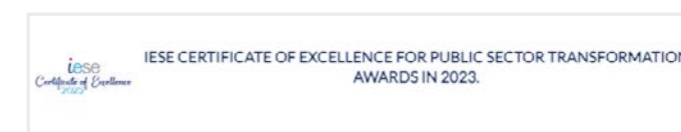
SUPPORTING EFFICIENT, INTELLIGENCE-DRIVEN RESOURCE USE IN THE SECURITY SECTOR

CLIENT'S CHALLENGE

The client - Lebanon's Internal Security Forces - sought to deploy human and material resources more efficiently to better respond to evolving safety and security needs. It was constrained in this endeavour by the bottlenecks and inefficiencies of its paper-based workflows, and was not adequately using operational data to inform decision making around mission planning, resourcing and management.

APPROACH

Siren supported the ISF to introduce an intelligence-led policing ecosystem with redesigned cross-departmental workflows, automated processing of manual tasks, and digital tools to aid data collection, analysis, visualisation and decision making. Creating this ecosystem involved:
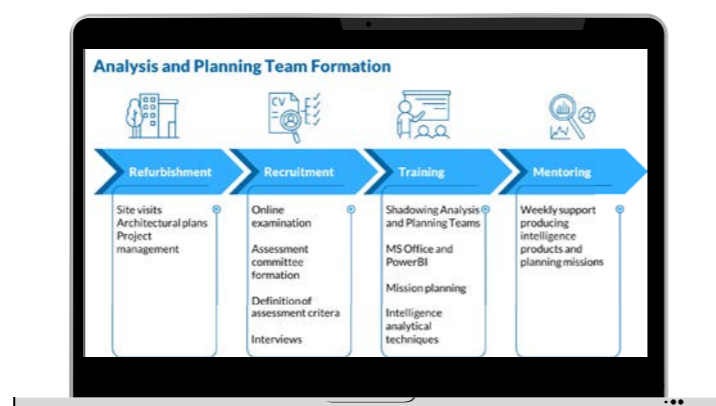
Building a network of six Command and Control Centres spanning Lebanon and linked digitally to 22 regional operations rooms.

Forming Analysis and Planning Teams. This included training and mentoring staff on how to collate, audit and process data to produce analytical products that inform decision-making.

Institutionalising a performance management framework across all command centres, allowing for the systematic analysis and identification of policing priorities, the subsequent setting of crime reduction indicators and targets, and the monitoring of performance.

Developing a bespoke digital platform, Fenix, that enables the capture and analysis of crime and operational data. It acts as a central interface for collecting and auditing data, analysing crime trends and auditing performance. Fenix is used by all operational ISF departments.

Providing strategic advice to ISF change champions driving the adoption of new intelligence-led policing systems and processes.

Analysis and Planning Team Formation

| Refurbishment	Recruitment	Training	Mentoring
Site visits Architectural plans Project management	Online examination	Shadowing Analysis and Planning Teams	Weekly support producing intelligence products and planning missions
	Assessment committee formation	MS Office and PowerBI	
	Definition of assessment critera	Mission planning	
	Interviews	Intelligence analytical techniques	

OUTCOMES

Enhanced capacities to identify and evaluate threats and efficiently deploy resources to maintain safety and security.

7 analysis and planning teams across Lebanon.

120+ analysts and planners trained and mentored.

~15 analytical reports produced annually.
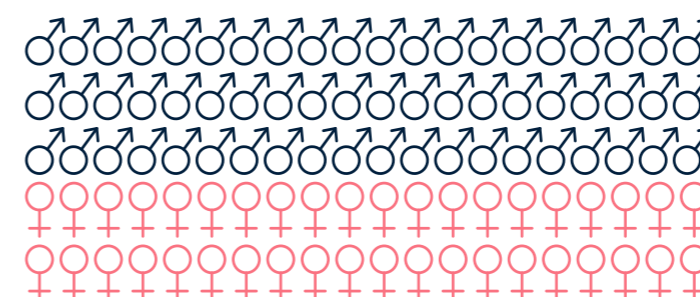
Advancement of women in operational roles:

40% of Analysis and Planning Team staff are female.

>120,925 incidents logged on Fenix since 2016.

96% of command and control centre users say Fenix contributes to improved ISF operations.

Case study

USING AI TO NAVIGATE INFORMATION DISORDER

CLIENT'S CHALLENGE

Today's media environment is awash with misleading, false and harmful content. False narratives that undermine our evaluative standards and sow hatred are disseminated with alarming ease and speed. As a result, it is growing harder to address challenges that require a collaborative approach and informed decision making. This is particularly so in the Arab world, where content moderation on social media is weak and a diverse array of operational challenges hinder the work of fact-checkers. Moreover, there are few available tools to streamline fact-checking work with Arabic language media.

APPROACH

Combatting information disorder is no small job. That's why we created the Disinformation Analysis and Listening Lab (Dalil), an AI-powered platform streamlining the fight against disinformation.

Who Can Use Dalil?

Everybody. Dalil is designed for anyone who wishes to monitor and verify content: information consumers doubting the veracity of a story, media workers tackling the spread of disinformation, civil society organisations working toward peacebuilding, as well as public and private organisations.

How Does It Work?

Dalil transforms and enhances content verification, delivering tailored and time-saving solutions that help navigate the relentless flow and evolving nature of disinformation. Automating the labour-intensive monitoring process, Dalil efficiently gathers data from diverse news outlets in varying languages. It clusters articles by topic and volume, providing users with a holistic view of trending issues. The platform enables users to search through this content, bypassing third party engines with opaque ranking algorithms.

Dalil's comprehensive verification suite features a blend of proprietary and open-source analysis tools to help evaluate the reliability of images, videos and text. This eliminates the hassle of toggling between multiple resources or applications. Dalil's adaptability is evident through its continuous integration of new tools that meet the needs of an ever changing media landscape.

A cornerstone in Dalil's arsenal of verification tools, Dalil Check harnesses the power of AI to conduct comprehensive discourse analysis. This custom-built tool helps users flag subjective speech within blocks of text, along with rhetorical devices intended to sway reader perceptions. By providing this analysis, Dalil Check facilitates the identification of potentially dubious content, significantly enhancing the efficiency and productivity of fact-checkers.

What's next?

The internet never sleeps, and neither does Dalil. We are constantly updating the platform with new tools and news sources as the information landscape evolves. We work closely with different user groups to identify their specific needs and tailor the platform to them. Dalil's modular, language-agnostic architecture enables us to deliver upgrades seamlessly and at pace.

OUTCOMES

Automated monitoring of **400+** MENA focused media outlets

Streamlined verification and decision making

Userbase of **230+** fact-checkers and media workers

30 partnering fact-checking entities

SCALE-UP PROJECT **2023** PARIS PEACE FORUM

BUILDING DIGITAL AND ANALYTICAL CAPABILITIES TO SUPPORT BUDGET RATIONALISATION

CLIENT'S CHALLENGE

Faced with shrinking donor support and the country's economic and financial collapse, Lebanon's Interior Ministry was under pressure to make more effective use of available resources. The absence of a government wide strategic framework guiding aid programming hampered coordination and encouraged an ad-hoc approach to program funding and design. Ministry staff lacked the means to effectively lead the dialogue around funding, owing to the absence of clear policies, systems and processes to collect, process and analyse data related to aid programming.

APPROACH

Combining systems-thinking, a client-centered approach and custom-built digital solutions, Siren helped embed evidence driven decision making around aid programming at the Ministry. This involved supporting the creation of:

- **An Analysis, Planning and Coordination Unit** at the Ministry. The APC Unit ensured a strategic and data-driven approach. It coordinated donors and partners to ensure that resources are used efficiently and effectively to address ministerial priorities. Siren supported the ministry to define the terms of reference for the unit; recruit competent staff; refurbish fit-for-purpose offices; and develop new processes for donor and inter-ministerial coordination. Siren additionally trained and mentored staff on data analysis, strategic planning, programme management and communications so the government was equipped to lead reform efforts.

- **A Donor Coordination Platform that gave the Ministry the capability to collect, monitor and assess information about donor programming.** The platform had a powerful back-end business intelligence tool to analyse incoming data. The platform created clear visualisations of this data that APC Unit staff used to inform their consultations with partners. The donor coordination platform was flexible, and could be adapted readily to other institutional needs
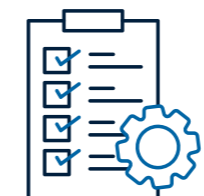
OUTCOMES

Standardised data collection in relation to donor programming

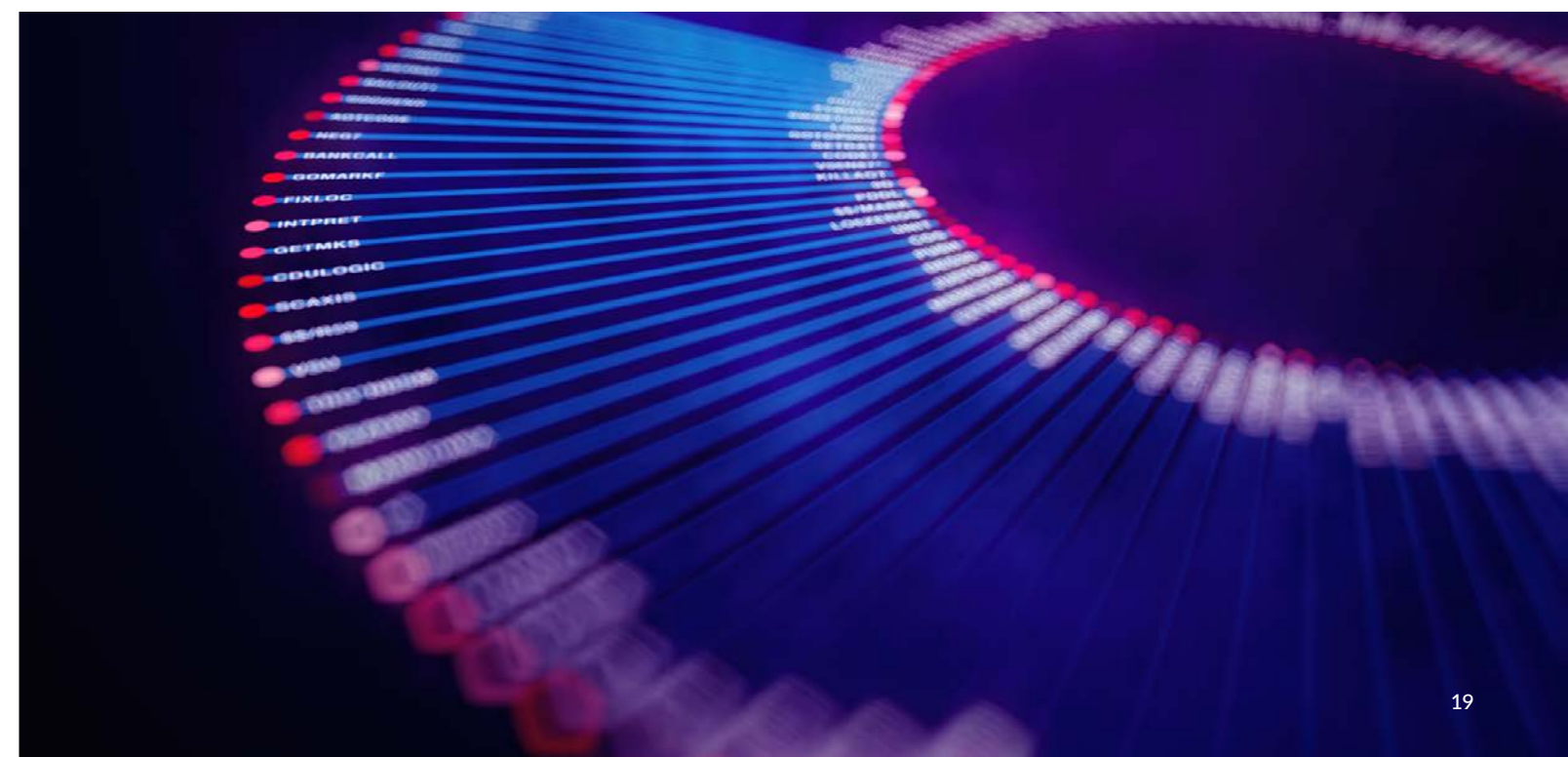Relevant donor and project information digitised on the Donor Coordination Platform

Ministry staff better able to oversee funds and projects, avoid duplication and resource wastage, and effectively lead funding dialogue

Optimised processes for donor and inter-ministerial coordination

Fit-for-purpose offices for the APC Unit

ACCELERATING THE DELIVERY OF HIGH VOLUME PUBLIC SERVICES

CLIENT'S CHALLENGE

The client, Lebanon's vehicle registration office, suffered from a lack of transparency, and slow, paper-based processes that enabled corruption and caused backlogs. Citizens complained about the limited availability of information on how to access services and complete administrative procedures. Disorganized workflows led to long queues, frustrating employees and citizens alike.

APPROACH

Capitalising on the partner's ambition to reform, Siren implemented a series of quick initiatives that significantly improved access to information and the quality of services rendered to citizens, while also streamlining work for employees.

Beginning in the second half of 2023, this involved renovating the queuing area, designing and deploying:

- An appointment booking portal
- An electronic queuing system to restore order
- An AI chatbot to answer citizens' frequent questions

Focusing on the pain points surrounding driving examinations and licensing, Siren also created an e-portal for driving schools that:

- Confirmed applicants' completion of the required driving classes
- Confirmed examination pass/fail status
- Enabled greater revenue generation by streamlining driving license issuance

OUTCOMES

While still at the beginning of a longer-term program, the interventions have so far reduce queues, controlled branch capacity, and improve staff performance and morale. In on the spot interviews with 10 employees, 90% said the new processes increased the efficiency of their work and 80% said they had reduced instances of clientelism.

+7200 appointments booked per month via the new system

3 hour drop in average queue times
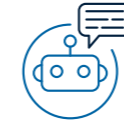
2,500+ questions handled per month by the chatbot

70 percentage point rise in citizen satisfaction

DRIVING PROGRAM EFFICACY AND IMPACT THROUGH DATA LIFECYCLE MANAGEMENT

CLIENT'S CHALLENGE

The client – a social cohesion NGO in Lebanon – needed a unified system for managing performance data on their projects reintegrating fighters who had participated in local and regional episodes of political violence. They lacked a way to systematically capture data, resulting in irregularities, anomalies and missing values. Their manual analysis approach was additionally time consuming and insufficient to assess under what conditions reintegration activities were impactful or not.

APPROACH

Siren **mapped and identified the client's organisational rules and processes.** Through regular meetings, they identified and prioritised the needed components, modules and features to be developed in the digital solution.

With the client's needs and existing processes mapped, the team **consolidated and sanitised the client's data** in preparation for analysis. They also created a risk and need assessment tool – **a digital platform tailored to the client's processes and business rules** that collects and unifies the sanitised data.

The team built **real-time data analysis and visualisation capabilities** into the platform, enabling the client to identify emerging correlations between their programmatic activities and reintegration efforts. Its **case flagging** system also enabled the client to identify cases that require attention and take proactive course-correcting interventions.

OUTCOMES

Streamlined data collection and analysis across multiple sources.

Reduced data search times.

Enhanced monitoring of programme outputs and impact evaluation.

Enhanced data security through robust user role and access management.

USING AI TO STREAMLINE LOST AND FOUND OPERATIONS FOR ENHANCED PUBLIC SERVICE DELIVERY

CLIENT'S CHALLENGE

The client - a police agency in the Arabian Peninsula - was struggling to efficiently and effectively process the over 10,000 reports of lost/found items being filed monthly by the public. High levels of human error in documenting item descriptions contributed to bottlenecks and the unsuccessful matching of lost reports and found items, impacting resource allocation and public trust.

APPROACH

As a proof of concept, Siren built a system to streamline lost and found operations. It included the following technologies:

- **AI image captioning** that automatically generates accurate, detailed descriptions of items using visual recognition, thereby reducing human error.

- **An AI inventory classification system** that automates and streamlines database management, enhancing searchability and matching precision. Implementing AI in inventory management practices like item-level tagging can increase inventory accuracy to 95%.

- **AI similarity matching** that compares lost and found items, thereby accelerating item reporting and retrieval for the public.

- **An interactive chatbot** to guide users through the reporting process and answer any questions.
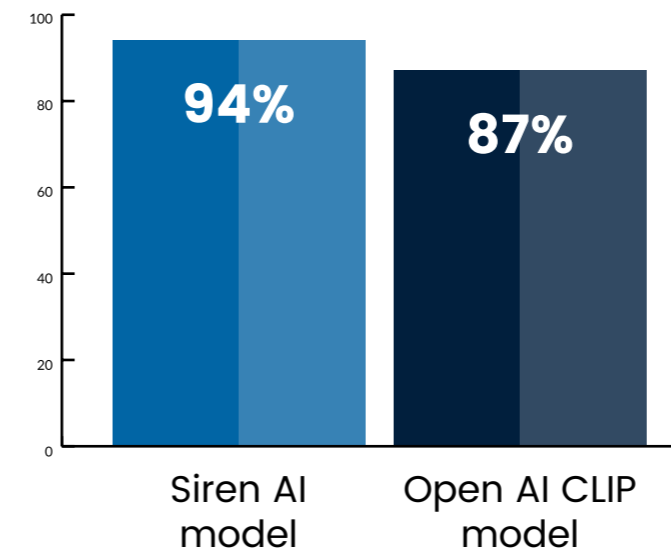
The tool was designed to integrate seamlessly with the client's existing on-premise systems and applications.
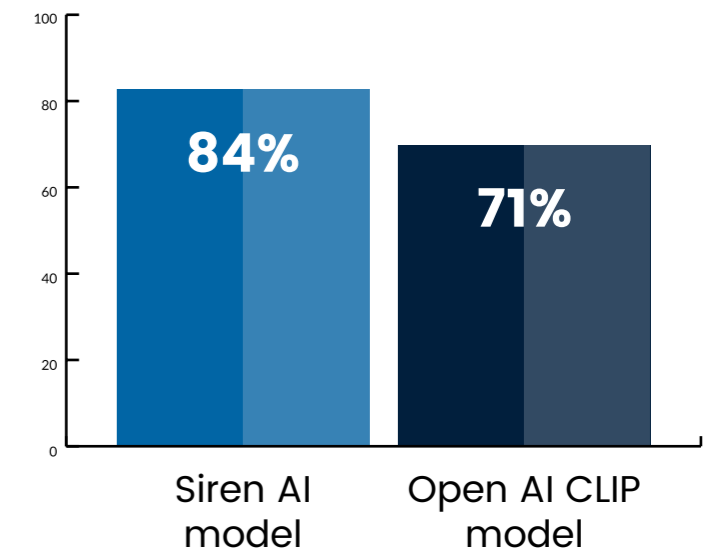
OUTCOMES

In benchmark testing against manual processes, Siren found that the system reduced the time spent matching found items with lost reports by **95%.**

WITHOUT AI
3 minutes per item

WITH AI
10 seconds per item

Accuracy in text-based image retrieval

- Siren AI model: **94%**
- Open AI CLIP model: **87%**

Accuracy in image matching

- Siren AI model: **84%**
- Open AI CLIP model: **71%**

High resolution image matching

OUR TEAM

Departmental cross-section

Communications

Research, monitoring, evaluation and learning

Project operations and consulting

Business and programme development

Corporate services

PROJECT

Data science and AI

Technical operations

Software engineering

Product development

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