



Unleash the full potential of open data in the Public Sector

**How the right data foundations
will set you on the path to AI**

A Public Sector briefing from Microsoft and KPMG

A world of data and possibilities

Governments and public sector bodies are facing some of the most pressing issues in recent history. From global challenges like COVID-19 to local initiatives for economic development, open data is becoming a critical factor in driving positive societal outcomes.

In 2020, the power of open data was highlighted by the efforts of Johns Hopkins University, which brought together diverse datasets to visualize the global impact of COVID-19. Beyond retrospective reporting, there are now growing calls to make critical healthcare data more accessible, so agencies and governments can pre-empt future outbreaks and inform policy decisions that mitigate their impact.¹

Across Africa, projects such as Code for Ghana² and Seedi³ are creating transparent open data ecosystems that empower citizens to track government services and provide accountability for decisions and spending.

Meanwhile, in the Middle East and North Africa, organizations are using open data to work on issues such as election monitoring, social justice, local economic development, and geospatial mapping.⁴

We have highlighted some specific open data developments on [page 5](#).

An open approach to data: the concept of making information freely available, accessible, and re-usable

There are typically two approaches to being open with data:

- Open Data – where datasets are made available online for anyone to access, often to promote governmental transparency
- Shared Data – where datasets are shared between agencies (but not publicly), requiring governance and policies to control access

An open approach to data offers huge potential to transform public services and drive up citizen happiness, but there are a number of fundamentals to get right first.

¹ <https://www.brookings.edu/blog/techtank/2020/11/02/to-mitigate-the-costs-of-future-pandemics-establish-a-common-data-space/>

² https://www.europeandataportal.eu/sites/default/files/use-cases/ghana_-_code.pdf

³ https://www.europeandataportal.eu/sites/default/files/use-cases/nigeria_-_seedi_msme_asl.pdf

⁴ <https://www.opendataimpactmap.org/mna>



Sharing for success

The ability to share data effectively is a key success factor of these initiatives: not merely within the walls of one organization, but externally by collaborating with other agencies and public-private partnerships as well.

Overcoming internal silos is certainly important to allow for more efficient processing and faster service delivery—but there are broader opportunities when you start to share that data externally. Combining datasets with those of businesses, technology providers, academic institutions, charities, NGOs, and other countries can spark many new possibilities.

For example, a number of leading clinical institutions in the US and Canada are working together to push the boundaries of cancer research. They have established a framework for cross-institutional data governance and an ecosystem of shared workspaces and analytical tools. If one institution is working on a particular type of cancer, another can add their insight without delay. It supports greater collaboration and data-driven research for the benefit of all.⁵

Breaking down barriers

To fully realize the benefits of shared data, however, there are multiple factors that need to be addressed first. These include governance, interoperability, and management.

Governance

Given that many open data sets are made accessible in the public domain, it's vital to have the right data classification policy and frameworks in place. These will provide clarity on internal approval processes and ensure that the right data is shared.

Having organization-wide governance mechanisms can also help mitigate data privacy risks and ensure that the shared data initiative is aligned with wider governmental strategies. For example, a government entity may want to empower local SMEs with certain datasets that, if made public, might give some advantage to global players.

Further governance mechanisms can include memoranda of understanding between organizations, and the adoption of industry or government schemes, such as the National Information Exchange Model.

Interoperability

With different public sector bodies using different technology platforms and services, adopting a common data format will help simplify the sharing process and keep operational costs down on all sides.

Management

The way that data is managed is also key to getting the full value out of technologies like AI and machine learning. Data must be cleaned, tagged, and standardized appropriately for automated rules to be applied consistently and for analytics tools to extract meaningful insights.

Overcoming these three barriers is essential if you want to deliver the convenient, transformative, and disruptive services that citizens now demand.

The innovation journey for public services

People's lives are changing dramatically thanks to digitization. The way we work, socialize, travel, exercise, consume, and communicate has altered completely—driven by the innovative use of data.

Public services are also on this journey of change. Traditional service delivery is being transformed digitally. Developments in AI, augmented reality, robotics, and automation will continue to embed innovation across the public sector—enabling governments to meet evolving citizen expectations, such as:

- Implementing Smart City solutions across a wider geography, in anticipation that fewer people will choose to live and work in built-up areas
- Providing technology to help rural dwellers thrive and be more sustainable
- Moving to a more diversified energy portfolio, including renewables such as wind and solar, with clear guidance for citizens and SMEs about financing, programs, and incentive schemes
- Supporting philanthropic and humanitarian efforts with a process to guarantee how funds reach the intended recipients
- Improving government efficiency to offset the financial impact of COVID-19 measures
- Sharing judicial information via portals and e-filing to increase the transparency of justice
- Showing supply and demand trends in the job market so educators can equip graduates with desired skillsets
- Analyzing non-sensitive, anonymized human capital data, such as training data, to help regulators adapt labor policies based on employee behaviors

Bringing these use cases to life requires a robust data management approach and a flexible cloud infrastructure.



Open data in the UAE—setting a national example

The United Arab Emirates government has approved a 10-year National Artificial Intelligence Strategy, to support its goal of becoming “the world's most prepared country for artificial intelligence”. It has also appointed a dedicated Ministry of AI.

Initial spending is focused on creating an **open data architecture** to ensure data quality, and a solid platform for AI technologies to progress from pilots to scaled production.⁶

Decentralizing data in Dubai

For example, more than 200 datasets have been made available for public use in Dubai to support the city’s objective of spreading happiness among residents and visitors.

80 percent of all government data is available for sharing on the Dubai Pulse platform, with a 100 percent target for 2021. The aim is to create a decentralized data exchange for both public and private organizations to add value to the economy.⁷

Dubai Pulse offers up-to-date information on demographics, construction, land use, transport, housing, and more. It provides a window into market forces and useful insights to aid decision-making, whether that’s a citizen choosing a school or a business looking to open a new facility.

Unlocking knowledge in Abu Dhabi

The Abu Dhabi Digital Authority (ADDA) is working closely with other Abu Dhabi government entities to deliver a smart digital government that is proactive, personalized, collaborative, and secure.

ADDA has launched a Data Management Program that allows these entities to work together in a seamless data-sharing environment and unlock the high-value potential of various government datasets.

It is supporting the move towards predictive decision-making and digital value creation, and helping to bring the UAE capital’s digitization agenda to full realization.

The Data Management Program is a key strategic tool in advancing the Emirate’s economic development, and is helping to build a diversified knowledge-based economy that enhances quality of life for Abu Dhabi citizens, residents, visitors, and investors.

⁶ <https://www.khaleejtimes.com/business-and-technology-review/oil-to-ai-the-new-resource>

⁷ <https://www.techradar.com/news/smart-dubai-identifies-40-use-cases-from-10-different-sectors-for-artificial-intelligence>

The starting point: ready your data

There's huge potential within the public sector to innovate. Combining open and shared data with new developments in AI and analytics can transform services and improve citizen happiness. But where do you start?

At the root of all successful open and shared data projects is the quality and control of the underlying data. Which means you need a robust and mature data management strategy that all parts of the organization sign up to. This will enable you to share trusted data, safely and securely, and extract actionable value from it to feed your next generation of AI-driven services.

How to lay the right data foundations

Agree your organizational approach to data governance.

Do you need to appoint a Chief Data Officer? Or convene a data governance committee? How often will it sit, and what will its remit be? Which internal and external datasets will you use? It's important to start off by agreeing these fundamentals to ensure your organization is properly set up to manage data sustainably.

Ensure the right policies are in place. Data management is not a one-off activity. Once the organization is set up, the right policy framework and supporting processes need to be implemented. Assess risks to data quality, ensure data security standards are being met, and put in place mechanisms to monitor adherence and violations.

Clarify your metadata. Most organizations do not have a formal approach to managing metadata, but this is essential. For example, is there a shared understanding across your service areas of who a 'citizen' is and what constitutes a 'service'? You may want to give users the ability to add their own descriptive metadata—such as a tag—to make the data source more understandable to others. When data is properly classified, you can also manage it in ways that protect sensitive or important data.

Improve your data quality. Quality must be measured, monitored, and managed so that it reaches the appropriate level to support the intended use of the data. Organizations should look to establish a guiding framework that covers the identification of data quality requirements, the implementation of appropriate rules, and the detection, management, and resolution of any issues.

Secure your data. Develop clear and simple guidelines to identify, protect, and monitor your important data assets. You should also establish the strongest protection for high-value assets (HVAs) that have a disproportionate impact on your mission. Consider how to protect data at rest (i.e. existing statically on physical media or in the cloud) and data in transit (i.e. data being transferred between components or over a network).

Decide on your data integration approach.

Building the right data model and ensuring that it is kept up to date is challenging and requires careful selection of the right paradigms and technology. Having the data you need at the right level of granularity and timeliness is key to ensuring you have the necessary information to make decisions at the point of impact.



Overcome legacy and free your teams

As expectations around open and shared data grow, internal teams can feel a lot of pressure to deliver results—and their first forays into the world of analytics often disappoint. This may also be due to a hesitance among public sector and government bodies to fully embrace the cloud, or simply a cultural resistance to change.

On-premises solutions are often seen as the safer option. However, these typically take longer to deploy, which can cause projects to stall or simply be abandoned—especially if the implementation roadmap is overly complex and hard to sell internally.

Internal capabilities can also be a barrier. Many organizations lack the requisite skillsets to monitor data quality and get the governance structure right. Without this solid data foundation, it will be difficult for projects to yield the anticipated value.

Upskilling your people on cloud technologies, security, and data management best practices can help build a momentum for change that will drive adoption and success.

Only when the right data foundations are in place should you start looking at what technology architecture you need.

Too often, organizations jump straight in and try to execute a project—and are disappointed by poor outcomes due to low-quality, inconsistent data, which dampens momentum and enthusiasm.

A joint approach to supporting your data journey

There is no single path to data management maturity, but we believe that everyone can benefit from a structured, yet rapid, assessment of your current approach.

Microsoft and KPMG have combined our respective data management frameworks to create a tailored offering for the public sector.

Our four-step model is specifically designed to help get your foundations right, so you can pursue your open data journey with confidence.

Four steps to data success:

- 1. Define your strategy**
- 2. Assess your data management maturity**
- 3. Draft your adoption plan**
- 4. Identify a valid pilot project**

1. Define your strategy

We can help define your open and shared data strategies via a rapid engagement that focuses on clear objectives:

Examining your open data mandate

It's important to start by exploring the details of ongoing government-wide open data mandates and what they mean for your organization. Often, regulatory bodies would have already published guidelines to follow. It is also advisable to identify any current open data initiatives in your organization and consolidate them into a coherent strategy.

Understanding your motivations

Different organizations have different drivers for change. Understanding exactly what you are seeking to achieve through open and shared data will help ensure that all future activities are aligned with your end goals. These may include:

- Improving citizen experiences
- Transforming service delivery
- Optimizing internal processes
- Saving operational costs

Developing your business case

It is crucial to engage your internal stakeholders to obtain a broad view of the outcomes expected from the journey. Not every organization needs to be a world leader in every aspect of data management, and some fundamental decisions should be made about whether to invest in building new capabilities or explore external partnerships or outsourcing arrangements instead.

You should then work on articulating the benefits of enhancing your data maturity and investing in open/shared data capabilities, using clearly defined business outcomes that match your identified motivations. This is essential to secure senior decision-maker buy-in and support for any required investments.

2. Assess your data management maturity

Performing a current state assessment

- We use a proven framework that covers all aspects of data management, aligned to regulatory standards
- This gives you the language and understanding of data management to help obtain stakeholder buy-in
- It also clarifies the importance of data management, rather than just the technology

Identifying the key gaps

- We will work together on a gap analysis of where you are now and where you want to be
- We can help you identify the initiatives needed to close that gap
- This can include any necessary technology investments, and where existing assets can be reused

3. Draft your adoption plan

Successful implementation of the business case will require your stakeholders to align on a clear adoption plan. This requires the right balance of speed and control, with separate teams responsible for carrying out adoption tasks and setting up governance processes.

Decisions need to be made on whether to rehost, refactor, or retire different data assets.

You will also need to assess if teams have the requisite skills to support the agreed approach, or if team structures need to be changed to ensure any skills gaps are addressed. Establishing a 'data culture' within the organization will be key, making **education** and **upskilling** a core value of your data journey. You can then start to define and prioritize workloads and establish rough timelines for completion.

4. Identify a valid pilot project

In order to prove the business case, we recommend starting with a small pilot project, rather than anything too big or over-ambitious.

This first project should primarily be a learning exercise. While it should align to the motivations and outcomes agreed in step one, the expected output should not be to deliver an instant result. Instead, you should look to gather as much insight as possible that will help refine the long-term requirements of your solution.

It is important to include broader stakeholders within this pilot phase to capture their feedback and suggestions. Inter-agency collaboration at this early stage will help secure the success of your open data project.

What will you do with your current data?

Rehost

move it to the cloud with minimal changes to the overall architecture

Refactor

migrate it to a platform-as-a-service environment to yield management and administrative savings

Retire

reduce migration efforts and reduce operating costs by retiring the asset altogether

Case studies

A selection of our recent open data projects

Understanding absenteeism in the public sector

The objective of this project was to determine potential factors driving employee absenteeism across local government, which could then be used by the regulators to amend policies.

We used advanced analytics techniques to develop cluster analyses based on absence behavior, which gave policy makers a better understanding of how groups of employees use their leave, and when leave is taken outside of normal policy limits.

Policy makers were able to conduct 'what if' simulations to determine how potential changes would impact employees across groups, helping them to make appropriate data-driven policy decisions.

The right data management foundation was a key success factor in this project. Optimizing the management of master data and data quality ensured that policy makers were working with standardized reference data, including approved leave types and employee job classifications.

The findings from the project will be shared across the government, as part of a wider open data initiative. This will help other entities better understand the behavior of their own employees.

Driving positive societal change with AI

The Ministry of Artificial Intelligence in the UAE has signed a memorandum of understanding with Microsoft to enhance joint co-operation in the field of AI development to support industry growth and create positive societal change.

This partnership will develop a set of concepts, strategies, and future ideas, as well as practical implementation mechanisms to meet four key objectives:

- Enhance the use of AI in all government bodies in the UAE
- Establish an integrated and global framework for governance and AI ethics
- Contribute to achieving the outputs of the UAE Strategy for Artificial Intelligence
- Identify and develop AI solutions to work towards achieving the United Nations goals of sustainable development

Specific areas of cooperation under this agreement include national capacity training in AI programs, certification in software and cloud computing, and the organization and sponsorship of emerging technology competitions and events for government and private entities.

"It is a privilege to work with the UAE Government on its plans for digital transformation. The country has long led the region on artificial intelligence adoption and development to integrate smart technologies into a vast array of digital touchpoints across the nation—empowering everyone to achieve more."

Jean-Philippe Courtois, Executive Vice President and President,
Microsoft Global Sales, Marketing and Operations



Building a one-of-a-kind customer service platform

Abu Dhabi Digital Authority (ADDA) is using Microsoft solutions⁸ to change the way UAE citizens and residents interact with their government for the better.

ADDA has developed an intelligent customer support center called TAMM, which unifies Abu Dhabi's government and business services into 80 integrated journeys.

This integration merges a 360-degree view of customers' information and their interactions across the government into a personalized and proactive customer experience.

Dynamics 365 creates a seamless omni-channel experience, enabling a range of government services to be accessed through one platform. Azure and AI ensures citizens benefit from a fast response to information requests, and stakeholders and field workers have the customer insight they need to make better decisions.

"Through Power BI, we are now able to ensure that all government data is viewed, including our services that are unified and user-centric. This drives our commitment to superior customer service. The Power BI unified dashboard replaces the multiple reports of the past, ensuring one of a kind customer service experience."

Fatima Al Obeidli, Contact Center Business Management
Department, ADDA

⁸Including Microsoft Dynamics 365, Power BI, and Azure

Processing unemployment claims faster

During the first six months of the COVID-19 pandemic, the National Insurance Institute of Israel received approximately 962,000 unemployment claims—a ten-fold increase compared to the same period in 2019.

To help prioritize, route, and settle these claims automatically, KPMG designed and developed a robotic process that has reduced handling times by more than 50 percent and claim rejections by 40 percent.

The digital solution provides a simpler, faster experience for customers and employees. Referrals at branches and over the telephone have fallen by 30 percent, and customer waiting times have dropped by 35 percent. Internally, over 750,000 hours have been saved on manual claims processing.

Digitizing the patient's journey

To help medical institutions in Israel improve communication with patients, KPMG has developed a modular Digital Nurse solution. This a unique digital platform that pulls together unstructured data from multiple systems, and then uses machine learning to deliver automated insights for both patients and staff.

The Digital Nurse allows patients to view their medical information via a self-service portal, and increases staff productivity by scheduling appointments and determining treatments automatically. It also includes a smart chatbot that leverages Natural Language Processing to answer queries rapidly.

The solution is transforming the patient journey in Israel by opening up digital access to key medical data that previously required slow and manual processing.

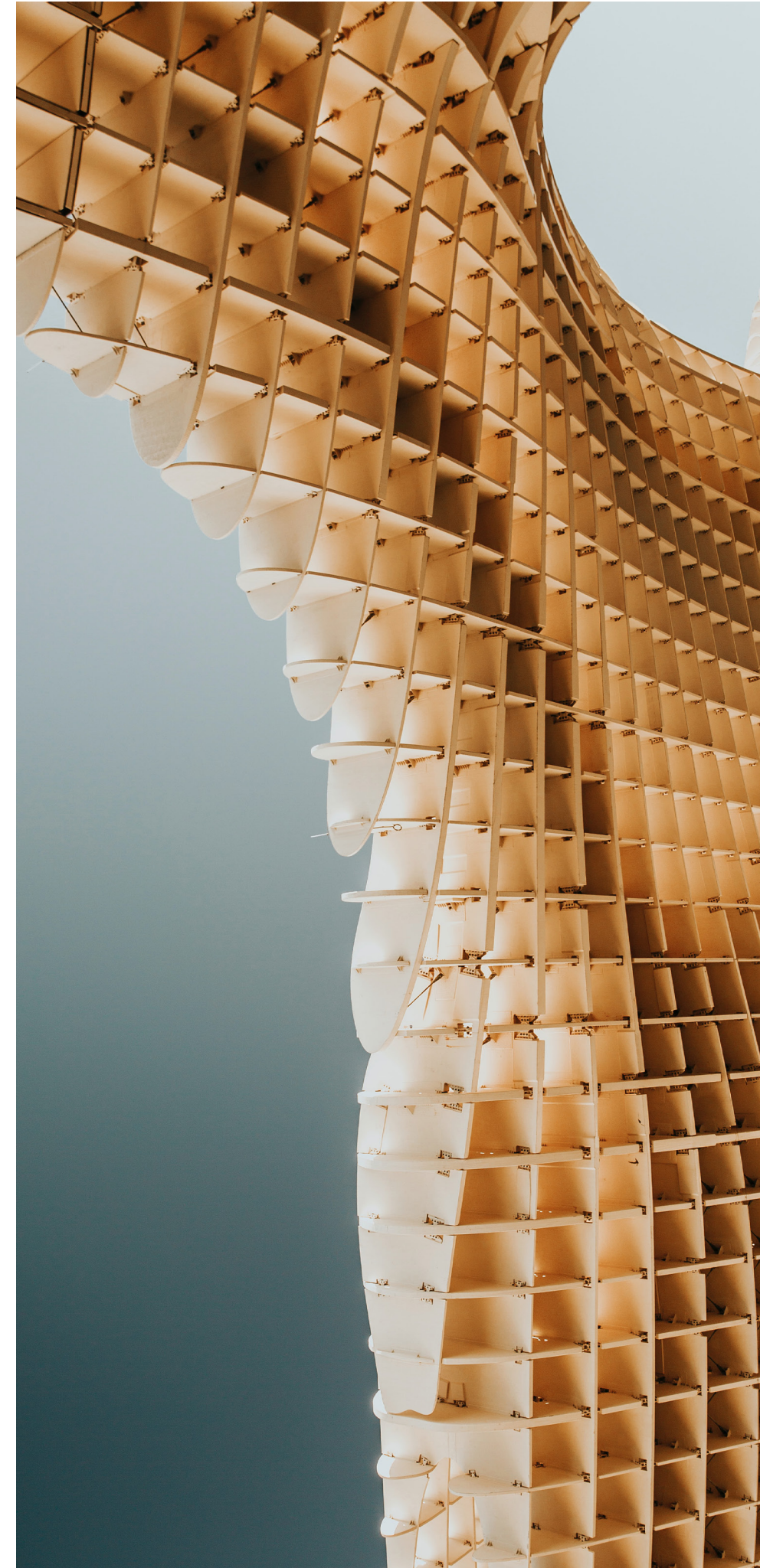
Bring the power of open and shared data to life

Public sector organizations are becoming far more proficient at collecting information, yet many still struggle to convert that data into actionable insights and meaningful outcomes.

KPMG and Microsoft can help you move beyond mere data collection to building a cohesive data strategy—so you can make more informed decisions that improve services for citizens, save costs, and reduce risk.

By combining KPMG's proven public sector consulting services with Microsoft's advanced technology and cloud solutions, our partnership will help maximize the use of data and AI across your citizen services to help meet your strategic ambitions.

Together, we'll help you put in place a mature approach to data management, based on a thorough assessment of your current capabilities. We will then work with you to identify high-value use cases and develop practical roadmaps to bring those solutions to life.

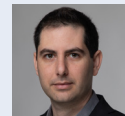


Ready for the next step?

Please get in touch to schedule a **data management maturity assessment** with our team.

Together, we can assist with:

- Benchmarking your current use of data and AI against your peers
- Exploring our proven portfolio of use cases to inspire your own thinking
- Prioritizing which solutions and projects you want to tackle
- Building a roadmap to implementation



Moran Ben Gigi
Partner, Head of AI,
Data & Analytics
Israel
mbengigi@kpmg.com



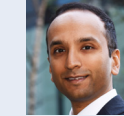
Mazhar Hussain
Senior Director,
Data & Analytics
Saudi and Levant
mazharhussain@kpmg.com



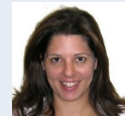
Shamit Govind
Partner, Emerging
Technology and Powered
Enterprise, Microsoft Lead
South Africa
shamit.govind@kpmg.co.za



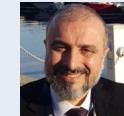
Devesh Vijay
Head of Data Analytics,
AI & Emerging Technology
Qatar
deveshv@Kpmg.com



Hiren Amin
Lead Partner, D&A
Lower Gulf
hamin2@kpmg.com



Anat Gil
Regional Senior Partner
Development Manager
Middle East & Africa
anatg@microsoft.com



Khaled Hazem
Industry Solutions Director,
MEA Public Sector
Middle East & Africa
khaledh@microsoft.com



Mazen Fayad
Government
Industry Lead
Middle East & Africa
mazenf@microsoft.com



Mohammed Saleh
Regional Industry Lead,
Health & Life Sciences
Middle East & Africa
mosaleh@microsoft.com



Baptiste Cazagou
Public Safety National
Security Industry Lead
Middle East & Africa
baptiste.cazagou@microsoft.com

Acknowledgments

We would like to thank the following colleagues for their key contributions to this paper:



Joseph Nadi

Associate Director, Data & Analytics,
KPMG Lower Gulf



Stasa Podgorsek

Data & Artificial Intelligence Business Lead,
Microsoft Middle East & Africa



Liron Ben Yosef

Director, Head of Big Data
& Analytics, KPMG



Oskar Nilsson

GTM Lead/Advisories & GSIs,
Microsoft Middle East & Africa



Prateek Mehra

Global Alliance Director, Infrastructure,
Government and Healthcare, KPMG LLP



David Burrows

Partner Strategy Director,
Worldwide Public Sector, Microsoft



Some or all of the services described herein may not be permissible for KPMG audit clients and their affiliates or related entities.

© 2021 Copyright owned by one or more of the KPMG International entities. KPMG International entities provide no services to clients. All rights reserved.

KPMG refers to the global organization or to one or more of the member firms of KPMG International Limited ("KPMG International"), each of which is a separate legal entity. KPMG International Limited is a private English company limited by guarantee and does not provide services to clients. For more detail about our structure please visit <https://home.kpmg/governance>.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.