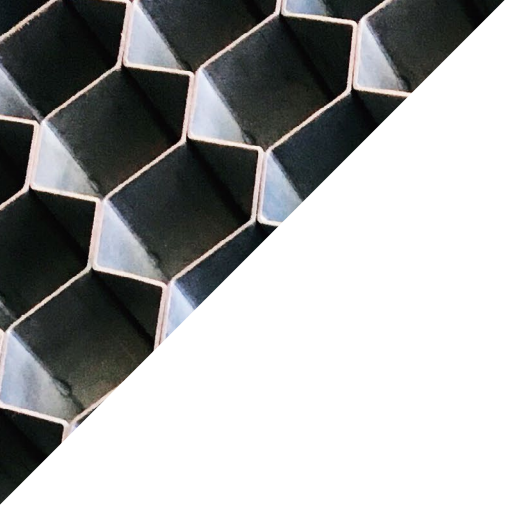


MONOCLE

LOW-CODE/NO-CODE
APPLICATION DEVELOPMENT

Embedment and Governance of Citizen-Led Development with Microsoft's Power Platform

Monocle Research Team

2021

IT leaders in the financial services industry are under increasing pressure to deliver application development and automation capabilities for their enterprise. The influx of requests and proposals to IT teams, who continue to battle with skill shortages and extensive development lifecycles, leads to the prioritisation of critical projects, backlogs and ultimately the non-fulfilment of requests.

This has brought the adoption of **low-code application platforms** (LCAP) to the fore, with software vendors launching offerings that enable simplified application development and automation by business users with limited coding expertise while ensuring IT is responsible and empowered to govern and monitor the platform.

In this paper, we explore how business leaders can look to implement and take advantage of LCAP and how an organisation's IT function should aim to manage support, security, and scalability of the enterprise's platform. We also outline the service offerings of Power Platform, Microsoft's LCAP offering, that has gained significant adoption in the South African financial services industry, as well as present various case studies where Monocle has utilised LCAP and Power Platform to drive digital transformation within our clients' operations.

> **By 2023, over 50% of medium to large enterprises will have adopted an LCAP as one of their strategic application platforms.**[1]

"THERE'S AN APP FOR THAT"

Low-code application platforms (for the purposes of this paper, no-code application platforms are included in the definition of LCAP) simplify development of applications through **abstraction** and **automation**. They rely on graphical models and pre-built application components with drag and drop functionality to abstract development to a level higher compared to traditional programming languages. The platform also uses transformation and interpretation automation to execute the model into working software applications without the need to write code.

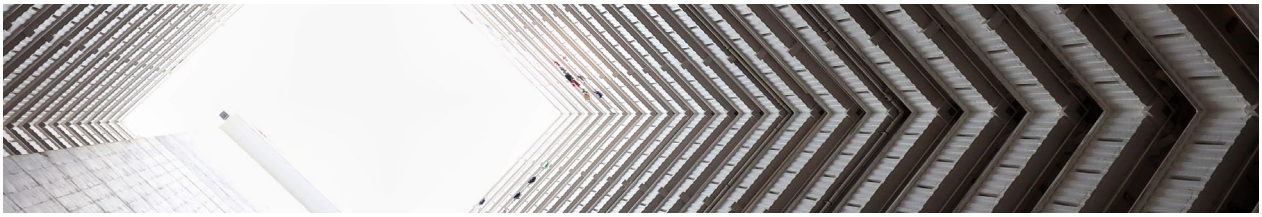
The benefits include simplified, rapid development and deployment of applications by individuals who have limited IT and coding experience to create proof-of-concept prototypes, automated business process and workflow applications, reporting and insight solutions and various other process optimisation solutions. LCAP vendors aim to offer scalable, robust and easily governable software that can produce end-to-end business solutions that function as a low-cost application layer on top of foundational systems and databases.

LCAP Benefits

- Accelerate digital transformation
- Reduced reliance on technical IT staff
- Improve process efficiency and responsiveness
- Alleviate legacy system constrains
- Enhanced integration with back-end systems

One of the most popular LCAP solutions we embed and utilise at our clients is Microsoft's Power Platform.

1. Gartner, 'Magic Quadrant for Enterprise Low-Code Application Platforms', 2020 https://www.gartner.com/doc/reprints?id=1-247RKSIN&ct=200922&st=sb



MICROSOFT POWER PLATFORM

In 2020, Gartner released their **Magic Quadrant for enterprise low-code application platforms**, evaluating various software offerings based on the product and service functionality, viability, pricing and market responsiveness amongst other factors. The "Leaders" quadrant, ranking LCAP vendors on their completeness of vision and ability to execute included Salesforce, OutSystems, Mendix, Appian, ServiceNow, as well as Microsoft's Power Platform, with Gartner highlighting Power Platform's advantages of proficient product strategy, extensive data integration through APIs, as well as artificial intelligence and robotic process automation innovation.[2]

> **In 2020, Microsoft Power Platform was classified as a "Leader" on the Gartner Magic Quadrant for LCAP.**

At Monocle we are engaged in various projects utilising the broad-based capabilities of Power Platform. In our experience, the platform is pivotal to the way our client's create and manage business data and workflow processes, as well as how they visualise and analyse their results. Power Platform is a cumulative term used for four Microsoft products, namely:

POWER BI
Business analytics

POWER APPS
Application development

POWER AUTOMATE
Process automation

POWER VIRTUAL AGENTS
Intelligent virtual agents

Data connectors

AI Builder

Dataverse

2. Ibid

POWER APPS

Power Apps allows for a relatively low-code development environment in order to **build custom apps** that automate business logic and workflow processes.

The software has a suite of apps, services and connectors that allow simple integration and interaction with existing data. Data can be sourced from various business sources (see Data Connectors) or through the Dataverse, a cloud-based data platform to manage your underlying data.

Power Apps enables the creation of web and mobile applications that run on all devices using either canvas apps (initiative drag and drop functionality), model-driven apps (developed and customised around a data model) or portals (external facing websites).

POWER AUTOMATE

Power Automate lets users **create automated workflows** between applications and services using connectors (application programming interfaces). It helps automate repetitive business processes such as communication and notifications, data ETL and decision approvals through trigger events.

Through UI Flows, Power Automate makes use of robotic process automation to automate user-application interactions that are repetitive in nature but do not have an established, API allowing Power Automate to integrate with legacy systems.

Power Automate is designed to integrate with other Power Platform applications like Power Apps, Power Virtual Agent and your back-end systems to build seamless end-to-end solutions.

POWER BI

Power BI (Business Intelligence) is a business analytics service to **visualise and analyse data** through interactive reports and dashboards. Power BI can be accessed remotely via cell phone or tablet and can be updated in real time to reflect the latest information from the database to provide insights and trends.

Power BI can source and visualise data from various sources including files such as excel, csv, and Azure, as well as on-premises SQL databases and Dataverse.

POWER VIRTUAL AGENTS

Power Virtual Agents enables anyone to **create chatbots** using a user-friendly graphical interface which can be tailored for unique business processes using no-code development. It removes the complexity of AI chat bot creation and the need to understand and write complex algorithms to provide natural language AI services to business users.

It minimises the IT effort required to deploy and maintain a custom conversational solution by empowering subject matter experts to build and maintain their own conversational solutions.

DATAVERSE

A scalable data service which lets users securely **store and manage data** from multiple sources and integrate that data in business applications using a common data model to ensure ease and consistency for users.

Dataverse is an Azure SaaS requiring little coding experience to setup and manage and is secured through active directory role-based security with logic and validation capabilities and metadata management that is used for Power App development.

CONNECTORS

Connectors enable you to **connect and integrate** your Power Platform applications to various Microsoft and third-party services and data sources through standard and custom APIs. These data sources include cloud and on-premises services, files, databases, web APIs and more.

There are more than 400 connectors for the Power Platform, enabling effective connectivity to the various data sources of an organisation.

AI BUILDER

AI Builder lets users and developers add **AI capabilities** to the workflows and PowerApps they create and use. AI Builder is a solution that allows you to easily add intelligence to your workflows and apps and predict outcomes to help improve business performance without writing code. Traditionally AI solutions have been expensive to implement, however the Power Platform has significantly reduced the implementation cost.

The aim of these applications is to provide the capability to manipulate, automate and analyse data-driven processes to your non-technical business users, who can then leverage their knowledge of their industry/product/clients/process to build fit-for-purpose, customised applications for themselves. **Citizen development** will address the unsustainably gridlocked pipeline of unmet software and application requests.

INTRODUCING AND SCALING LOW-CODE APPLICATION PLATFORMS WITHIN AN ORGANISATION

LCAP, by design, encourages business users to develop applications as part of a citizen-led, democratised development practise in which IT should aim to position itself at the centre in order to both sanction, support and govern LCAP initiatives (1. Citizen-led Development Governance). Much like the introduction of robotic process automation into an enterprise, Monocle encourages implementation of LCAP using a clearly defined and comprehensive flightpath for effective embedment and scalability throughout the organisation (as will be detailed in section 2. of this paper, 2. LCAP Adoption & Implementation).

1. CITIZEN-LED DEVELOPMENT GOVERNANCE

Low-code/no-code platforms are designed to democratise software development and through abstraction and automation, allow for a **citizen-led development** approach whereby non-professional developers build applications that are utilised within the organisation but are governed and sanctioned by IT. This oversight by IT is critical in preventing a culture of **shadow IT** whereby individuals utilize and manage their own software (outside of organisational controls) to help optimise their business activities. A 2019 study found that over 70% of IT leaders found that "Shadow IT" created support issues, where IT unintentionally become responsible for resolving and left the organisation open to security vulnerabilities such as cybersecurity and data privacy breaches.[3]

> **This oversight role by IT is critical in preventing a culture of shadow IT.**

It is therefore an imperative for IT functions to position themselves as the centralised authority for a citizen development program. A significant advantage of offerings like Power Platform is the use of a **single**, **unified platform** that is built to incorporate many of these features that prevent Shadow IT practises.

A centralised IT authority for LCAP and citizen-led development should consider the following governance issues:

Strategy – "How to position citizen-led development"

The development and communication of clear strategic objectives and restrictions around LCAP will properly define how the organisation will seek to make use of these applications and set the boundaries for citizen-led development. IT can ensure it sanctions use cases, application development lifecycles, data management, security and access processes of the organisation while potential users are aware of what the platform is capable of and what they are permitted to accomplish with the platform.

Oversight & Security – "How to manage citizen-led development"

LCAP should be managed by a centralised IT centre who operates as the service administrator in order to monitor and sanction activities; manage the platform and services and its security, as well as manage the relevant data services and connectors. This will require organisations to consider application development, application processing and outputs.

3. Dimensional Research, 'Digital Discount, A Study of Business and IT Alignment in 2019', 2019, https://www.mendix.com/wp-content/uploads/IT-Business-Alignment-Study-Global.pdf

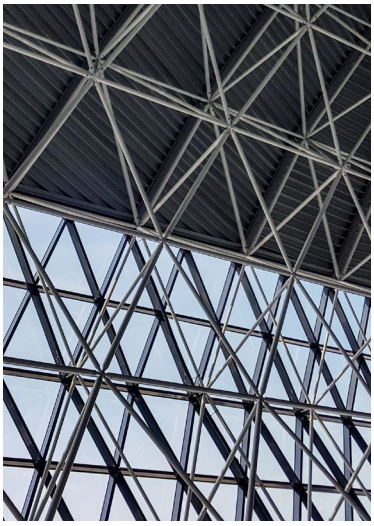
Through the use of Power Platform as a single, unified platform the central IT service must:

- Create and manage **environments** for various target audiences to oversee the Power Platform suite, application lifecycles (i.e. development, test and production; business unit split), created apps and flows as well as user permissions and controls. Users will then log a request for any environment needs, following an internally structured process, that ensures alignment of intent and support between developers and administrators.
- Monitor and review citizen development activity to ensure that the **security** of infrastructure, systems and data is maintained. Power Platform, as a single unified platform, offers:
  - Secure authentication and authorisation through Azure Active Directory that provides administrators with visibility of the platform's users and activity.
  - Security roles at the environment level to control application and automation creation activity.
  - License management of specific services and connectors.
  - Advanced security models for environments with a Dataverse instance with audit logging capabilities.
  - Data loss prevention policies used to restrict the combination of connectors and prevent data from being unintentionally exposed.
  - Tenant-wide, usage, inventory and maker activity analytics.

Embedment – "How to support citizen-led development"

Organisations should ensure they have adequate **training** and **support channels** to foster enterprise-wide adoption. While no-code/low-code development is designed to be simpler, in our experience we find business users are often overwhelmed by these initiatives and do not have the required technical understanding. In this case, training around the platform and internal organisational policies are important in producing competent citizen-developers.

While no-code/low-code development is designed to be simpler, in our experience we find business users are often overwhelmed by these initiatives and do not have the required technical understanding.



Further than this adequate **support channels**, **tools and services** should be made available to deal with technical issues regarding the platforms' services, application development, data and access management. Creating a community for collaboration is also advisable for knowledge sharing and the assimilation of useful apps across the organisation.

Finally, as part of the centralised IT authority, a **Centre of Excellence (CoE)** can be established to drive efficiency and standardisation across the organisation by offering technical expertise and insights to citizen developers while also facilitating collaboration across business silos. While not a prerequisite to use Power Platform, Microsoft encourages the establishment of a CoE to drive adoption and ease administration across an organisation and has launched the Power Platform Centre of Excellence starter kit.

2. LCAP ADOPTION & IMPLEMENTATION

Adoption of LCAP has reached a watershed moment with 38% of organisations looking to adopt a platform while 41% have done so already.[4] However, citizen-led development will need to be encouraged and driven by business leaders to engage their staff to start and follow through with the development of appropriate low-code projects within their functional area/unit.

To ensure LCAP provides effective return on investment and is embraced across the business, Monocle recommends a five-stage plan as explained in our paper, Robotic Process Automation – Navigating the RPA Implementation Flightpath.[5]

STAGE 1 *Executive Overview*	Determine the organisation's **current LCAP maturity level** to develop a high-level implementation plan. • Firms should understand and clearly define their LCAP strategy and how it will be implemented across infrastructure, business structures and processes. **This should also consider how to manage citizen-led development** (see strategy below).
STAGE 2 *Organisational Efficiency Impact Assessment*	Identify **specific areas** for LCAP implementation in the short, medium and long term. • Identify **business areas** that can benefit the most from LCAP with suitable operations that allow for effective solutions such as workflow and data management processes.
STAGE 3 *Deep Process Analysis*	Identify **specific processes and tasks as well as corresponding business users** that are highly suited to an effective LCAP implementation. • While a centralised readiness assessment is advisable, the citizen-led nature of LCAP development means organisations should identify citizen-developers amongst **business users** who will best understand which of their own processes and tasks can be optimised through application development.
STAGE 4 *Implementation*	Action the **progressive implementation** of LCAP initiatives with the goal of enterprise-wide implementation. • Introduce Power Platform with centralised training and support to encourage and enable citizen-led development initiatives that operate within the bounds of a comprehensive LCAP governance framework to create a holistic solution. Business leaders should take the initiative to motivate staff to take advantage of the platform and the support provided.

4. Outsystems, 'The State of Application Development', 2020, https://www.outsystems.com/
5. Monocle, 'Robotic Process Automation – Navigating the RPA implementation flightpath', 2020, https://monocle.co.za/ViewPosts.aspx?Art=Robotic+Process+Automation

STAGE 5 *Governance*	Establish your LCAP and citizen-led development **governance programme** that will ensure its stability and sustainability within the organisation. • Sanctioned citizen-led development should be governed and monitored effectively by a central IT authority and plays a critical role to avoid shadow IT operations that introduce operational risk.

CASE STUDIES

In this section we collate various case studies of work performed by Monocle using LCAP to demonstrate to business and IT leaders the opportunities of LCAP.

Importantly, LCAP and citizen-led development allows the business teams who are close to the detail to define and build the workflow components using low-code features offered by Power Platform.

1. Reference Data Management Tool

Background: Regulatory reporting requirements are constantly being updated by the governing authorities and supervisory bodies which can lead to the reference data – used to classify and categorise other data – needing to be reviewed and updated. Examples include the BCBS's Basel III finalisation framework, SARB's Deposit Insurance Scheme and SARS's tax reporting.

Business Challenge: When business needs to update their reference data, it must be logged with and actioned by the dedicated business function. This process, while built to protect data integrity and quality, can be tedious, forcing business to look for manual work arounds while still managing the various parties to ensure their requirements are met adequately.

Solution: By enabling business to update regulatory reporting reference data autonomously, they can respond quicker to regulatory updates and reduces the pipeline for data updates with the respective data teams. Therefore, a simplified Power Apps graphical interface was created to capture and log any updates to the reference data while Power Automate was used to execute stored procedures with the Power App inputs into the back-end SQL database.

The solution allowed non-technical business users to update their data without technical staff assistance and maintained data security and integrity through the use of licensing, connector and environment access controls. Furthermore, the data on the back-end SQL database was visualised through Power BI to provide real-time analytics for the finance and credit teams.

2. Operational Risk Report Lifecycle Management Tool

Background: Every month the Operational Risk Committee receives an enterprise-wide operational risk and issues a report. This monthly report must be consolidated from the various business lines across the organisation. However, prior to this, the individual reports from each reporting team requires multiple internal reviews and approvals.

Business Challenge: The reporting lifecycle includes over 80 participants from across the organisation with multiple levels of review regarding the quality of writing and reported content. This process was originally managed through emails, making it susceptible to issues, including missed notifications, limited oversight of progress and limited co-ordination.

Solution: Through the use of Power Apps, a centralised report lifecycle management tool was built to track each report submission through its review and approval lifecycle, as well as performing document versioning and access management. Power Automate was then used to automate the notification process when the input of a participant was required.

This allowed for real-time oversight across the entire review process, while also removing confusion around the timing of handovers and individual responsibilities regarding the review process.

CASE STUDY SHORTS

	BUSINESS CHALLENGE	SOLUTION
Updating Vendor Information	The client needs to update vendor data stored in their ERP system. Vendors send information via email in the form of PDF documents. The information provided can vary from tax clearance certificates, bank account details or BEE certification. The mailbox needs to be monitored and data manually captured in the system.	**Power Apps** and **Power Automate** components are used to load documents into a central repository. **Optical character recognition** (OCR) in the AI builder is then used to automatically extract information from the pdfs. The users then validate the information using the PowerApps component and before approved results are stored into a central ERP system.
Tax Compliance Tracking	As part of the income and VAT tax submission process, the client needs to track compliance for companies and their holding companies to see which entities have outstanding submissions as well as determininge any bottlenecks in the tax submission process.	Using **Power Automate**, the tax compliance workflow is designed and built to allow a user to be notified when a task is assigned to them. The user then logs onto the **Power App** solution to complete and then submit their assigned task to the next user in the process. Once again, the business team who is close to the detail can define and build the workflow component using the low-code features offered by Power Platform.

Insurance Claim Processing	The administrative team needs to approve payments for the settlement of claims. These claims come with various descriptions that need to be assigned to specific product categories as part of the recording and reporting process.	The batch transaction data is loaded through a central data repository via **Power Automate**. A database engine performs a preliminary product mapping according to pre-configured business rules. The unmapped claims are then pushed to the **Power Apps** solution to be manually linked by the users. Once mapped the transaction details, recorded in an audit log, are sent to the approver via **Power Automate** to finalise transactions and updates are written to the database.

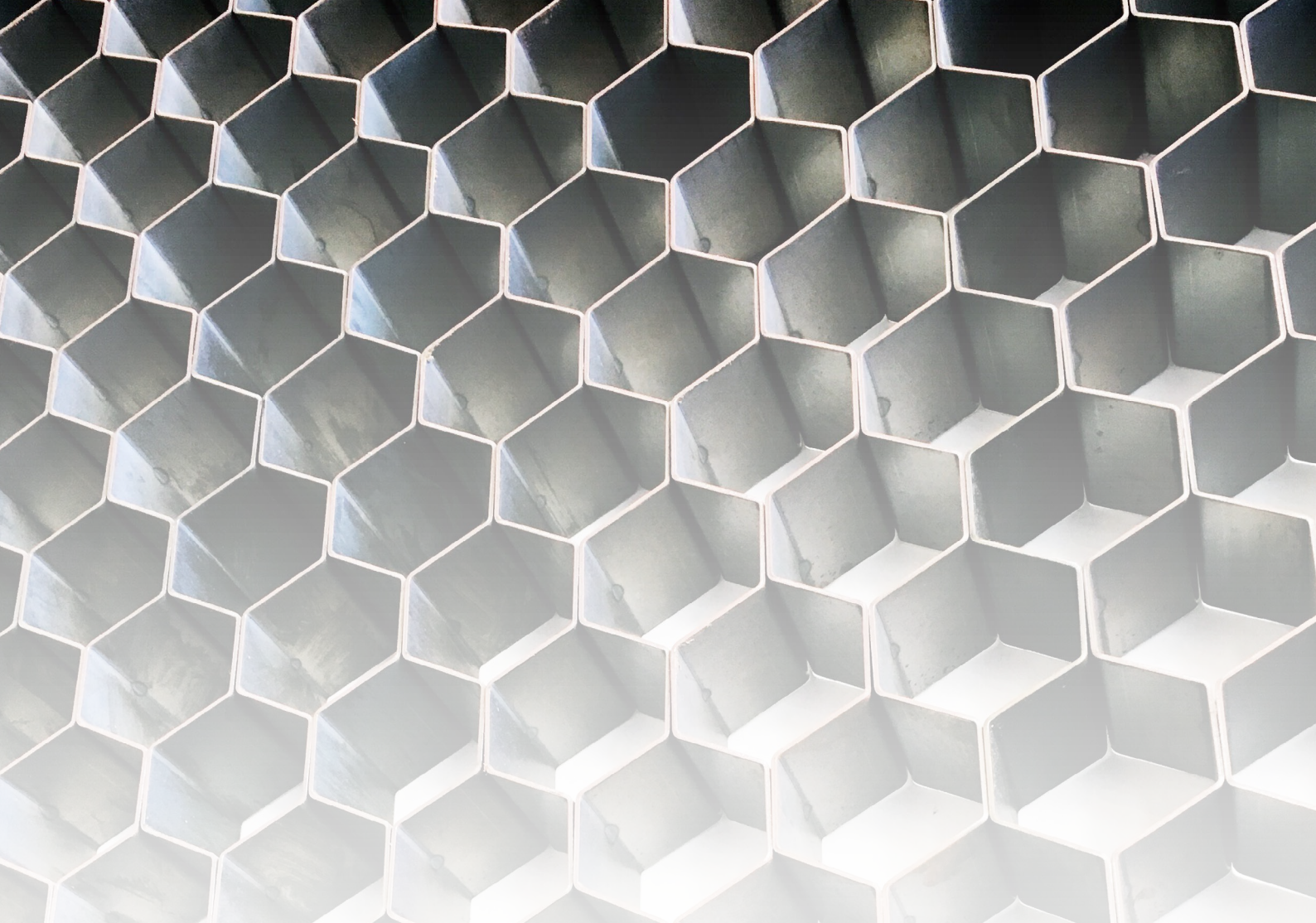
HOW MONOCLE CAN ASSIST

At Monocle we understand that execution and implementation is where the true return on investment is realised and work closely with business leaders to evaluate, design and build low-code/no-code solutions through their chosen platform. Our accreditation-linked training completed by our consultants and our deep understanding of data management and governance ensures that we are able to implement and maintain LCAP solutions at both the level of Power Platform and the back-end services and databases. We assist our clients in producing robust, end-to-end applications and solutions that add value to the business, whilst also working with IT and data services in the client organisation to ensure LCAP development is managed effectively and meets IT governance policies and international best practice.

ABOUT MONOCLE

Monocle is an independent, results-focused management consulting firm, specialising in banking and insurance, with almost two decades of experience working alongside industry leading banks and insurance companies around the world. With offices in London, Amsterdam, Cape Town and Johannesburg we service our clients across the United Kingdom, Europe, Scandinavia, Asia, South Africa and much of Sub-Saharan Africa.

We design and execute bespoke change projects, from start to finish, bridging the divide between business stakeholders' needs and the complex systems, processes and data that sit under the hood. We offer several unique capabilities to our clients, which have been forged over time through the combination of a highly specialised skillset and extensive experience working with the systems, processes and people that are at the heart of the financial services industry.



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