# OMDIA UNIVERSE

Omdia Universe: No Code, Low Code Solutions, 2023–24

OMDIA

Summary

Catalyst

The market for enterprise no code, low code (NCLC) application development solutions has entered the mainstream. Yet, the act of selecting a suitable product has become more difficult, as there are so many players. Omdia has produced a side-by-side vendor comparison in this Universe report that will make the decision process much easier. Given the complexity of applications and the high cost of development today, NCLC offers a way for enterprises to produce applications rapidly to meet market demand—and at a lower cost and with high quality.

1. Figure 1: The Omdia Universe for no code, low code solutions, 2023–24
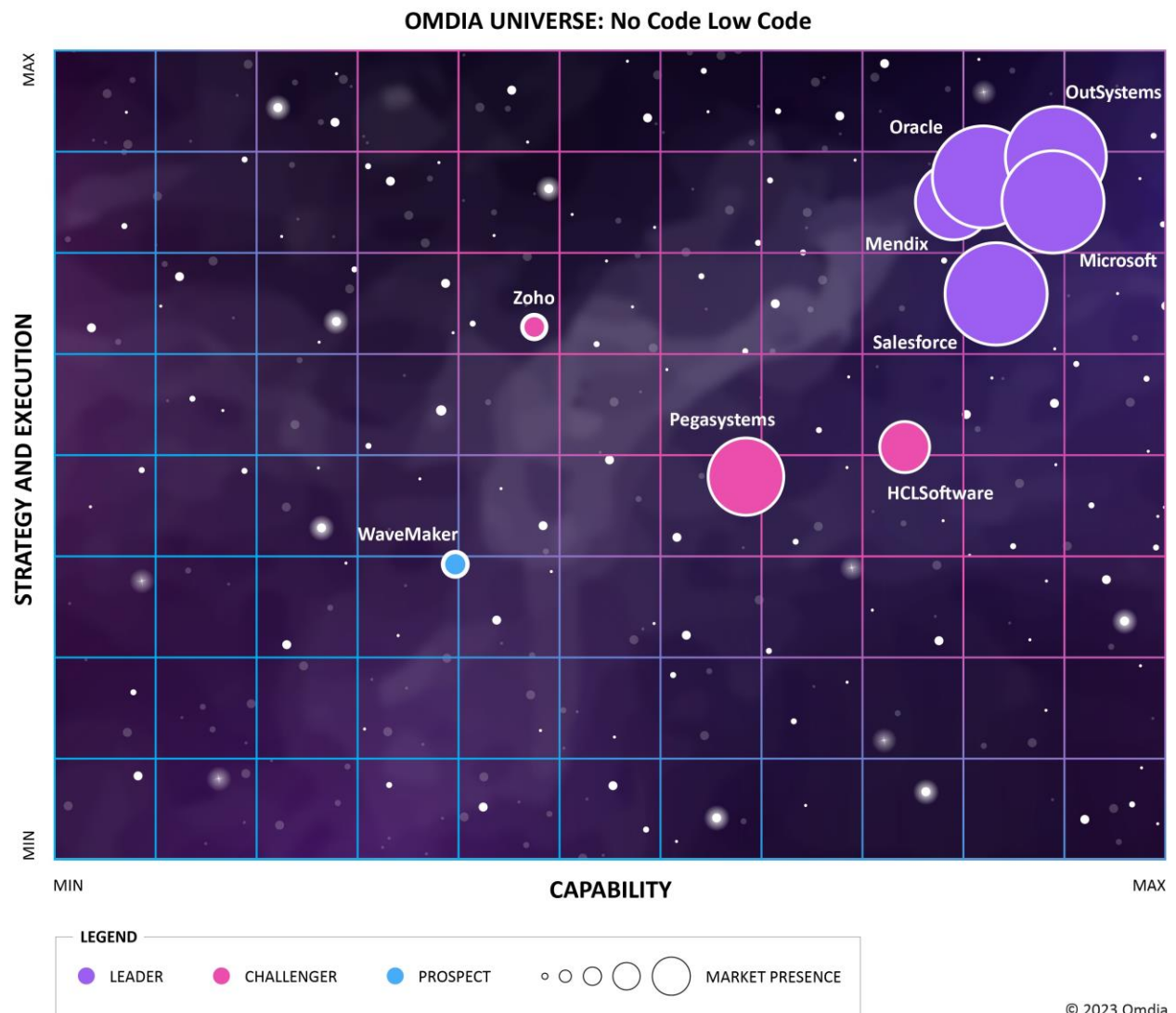
Source: Omdia

All vendors included in the report were approached to provide input to this study and most engaged in the process. Note that two vendors were only partially engaged, but with publicly available information, Omdia was able to include them. **Figure 1**, the Omdia Universe chart on NCLC solutions in 2023–24, is the key result of our vendor product assessment.

Omdia view

Application development has gone through several major overhauls since the turn of the century when a single programming language supplied everything needed out-of-the-box: backend database connectors, middle layer logic, and frontend interfaces with ready-made widgets. Easy-to-use programming solutions, the precursor to low code, were available but as a niche segment of the market. The web revolution, followed by the mobile revolution, changed everything. To build modern state-of-the-art applications today, one needs a host of technologies—especially for the frontend versus the backend—and a development (or DevOps) team with multiple skills. These requirements have raised the cost and complexity of application development. As enterprises started to take a new look at the low code solutions available, the vendors saw an opportunity, giving rise to the NCLC solution market expansion that has occurred since the turn of the century.

The market for NCLC tools has grown considerably over the last five years from being a niche activity to mainstream adoption. One major factor has been digital transformation and the move to the cloud. Businesses that were running just fine with forms-based desktop applications running on-premises were faced with a need to run on the cloud and have a web interface. Now these businesses are faced with the dual challenge of choosing the right technology to fit their new environment and dealing with the skills gap in a developer workforce raised on building traditional applications. Modern NCLC tools are the perfect solution, as they deal with both these challenges and more:

- They are designed for building cloud applications with web interfaces.
- Their easy-to-use visual interfaces mean developers have an easy ramp-up to new skills.
- Automation reduces human errors, and hence NCLC solutions create high quality applications.

As such, Omdia has seen the NCLC solution market rise with cloud adoption.

The NCLC solution market has a very long tail, with many small niche players and a group of very large established players at the top. What kind of applications a business develops with the NCLC tool plays a large part in whether they opt for major players or for niche players in the long tail. If the need for NCLC is to build prototypes or small-scale internal applications, then there is less risk in choosing a tool from across the tail spectrum. However, building mission-critical applications on which a business relies for its function requires more care in choosing a solution.

Apart from factors such as the ability to scale and availability of component libraries and templates, the presence of a large and active user community also plays a major part in decision-making. Every tool on the market has its idiosyncrasies and bugs, and when a user runs into one of these, it can be a challenge for the vendor to deal with it in a timely manner. With their set of IT environment configurations, every user can be considered a unique case. Finding another user with the same challenges and a similar IT environment is more likely in a large user community. Therefore, seeing whether the tool has a large and active user community and is able to share notes and knowledge are important considerations when choosing a vendor. Community knowledge of fixes and workarounds is essential today and is a testament to software development being a dynamic social activity of exchanges between participants at many levels.

Analyzing the NCLC Universe

Market definition

Omdia defines an NCLC solution as one that provides both no code and low code application development capabilities in one box. However, some vendors specifically focus on the low code end of this market and do not seek to cater to no code scenarios. These low code vendors offer diverse and advanced features that target the needs of enterprises, such as compliance and security, that are necessary for external-facing, mission-critical use cases and that can compete with professional, hand-coded applications. The no code end of the market is seen as satisfying the need for rapid application development in line-of-business (LOB) use cases, typically for internal use. But some solutions on the market are aimed at the whole spectrum, from no code to low code in one solution.

The solutions in this category have subsumed mobile application development solutions, typically with low code/ rapid development features. The mobile market has now settled with either native apps on iOS or Android OSs or progressive web apps and responsive web apps that work irrespective of device and form factor. The latest-generation NCLC solutions target web and mobile, and some will extend to wearables and Internet of Things (IoT).

The main attraction of an NCLC solution is that it automates much of the plumbing and integrations with the backend layer. It also does the same for much of the time-consuming frontend user interface (UI) development. Even professional developers value using NCLC to kick-start projects and save time. Given the complexity of modern application development and the many skills required in a team to build a mission-critical application, an NCLC solution that only requires one skill to operate can be a time and cost savings for organizations, especially those facing skill resource challenges.

An overview of a generic NCLC solution and its technology stack is shown in **Figure 2**. There are three classes of app build studios, depending on the target user:

- **No code:** For citizen developers and business experts with little programming experience.

- **Low code:** For business analysts with programming experience to professional developers.

- **Model-based development:** Equivalent to low code in the capability of app sophistication possible, it requires initial training in modelling but is suitable for a range of user profiles from citizen developers to professional developers.

The type of solutions falls into two groups based on whether the created app has to be linked and run on the development platform or whether there are no dependencies with the creation tool and the app can run anywhere. There is also a difference in whether the creation studio runs in the cloud or on-premises. Solutions also vary on target deployments available once users move beyond mobile and web.

2. Figure 2: Overview of NCLC solution
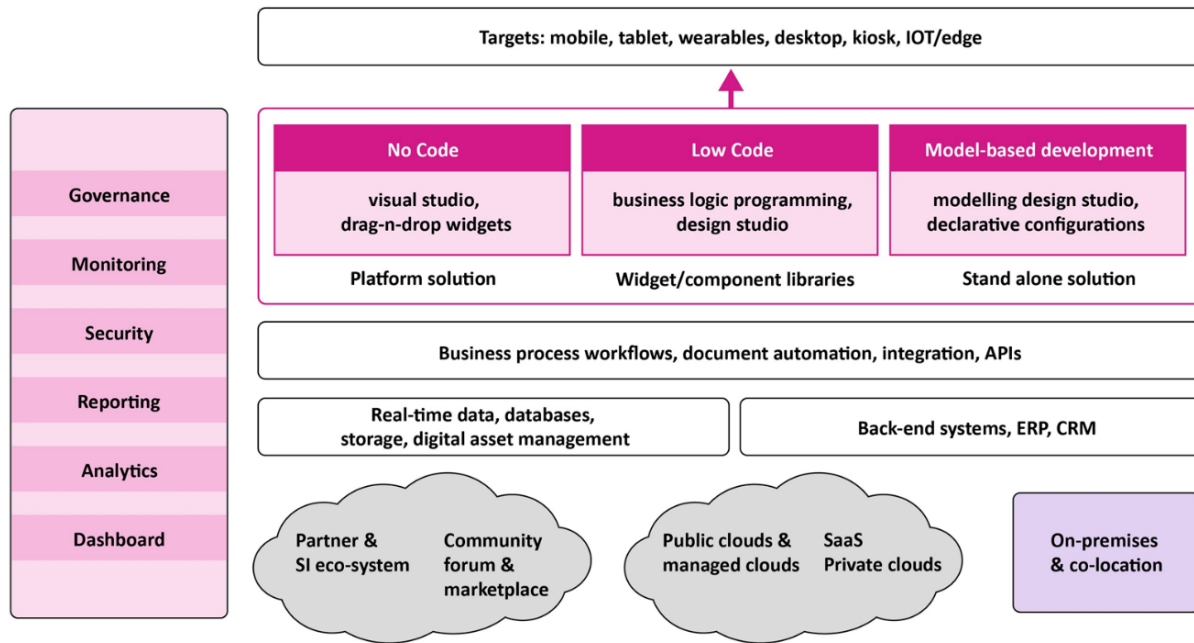
Source: Omdia

The **Appendix** section provides a high level summary of topics on which Omdia assesses NCLC solutions, reflecting key solution capabilities.

Market dynamics

This report is focused on the top end of the NCLC market, i.e., *enterprise* application development. For this market, Omdia's assessment has identified one pure-play vendor, OutSystems, and two that operate as a separate business unit from their parent company: Mendix (acquired by Siemens in 2018) and WaveMaker Software (acquired by Pramati Technologies in 2013). All other vendors in this assessment have solutions that are part of an enterprise portfolio or platform: HCLSoftware, Microsoft, Oracle, Pegasystems, Salesforce, and Zoho.

The biggest disruption in this market occurred in November 2022, when OpenAI released ChatGPT, the large language model (LLM) using generative artificial intelligence (GAI) technology. GitHub (owned by Microsoft) had already released Copilot in 2021, a development assistant tool, and co-developed with OpenAI (which has Microsoft as its biggest investor). The latest Copilot benefits from OpenAI's latest GPT releases, and Microsoft is infusing Copilot across its Power Platform portfolio.

While AI-based code assistants have a history going back some years and some of the vendors in this report, such as Mendix and OutSystems, had already invested in this technology and have been using it in their solutions, the whole market is moving up to the latest LLM/GAI technology. Every vendor in Omdia's report is leveraging this technology in some form or plans to (as outlined on their roadmap) by the end of 2023/early 2024.

Microsoft has been quick to exploit its partnership with OpenAI, but OpenAI is monetizing its technology with the wider market. Some vendors in this report are taking advantage of that, while others are working with alternative LLM models. What is clear is that code assistance plays nicely with less experienced developers who would gain a lot from being guided in design and development and helped in testing and
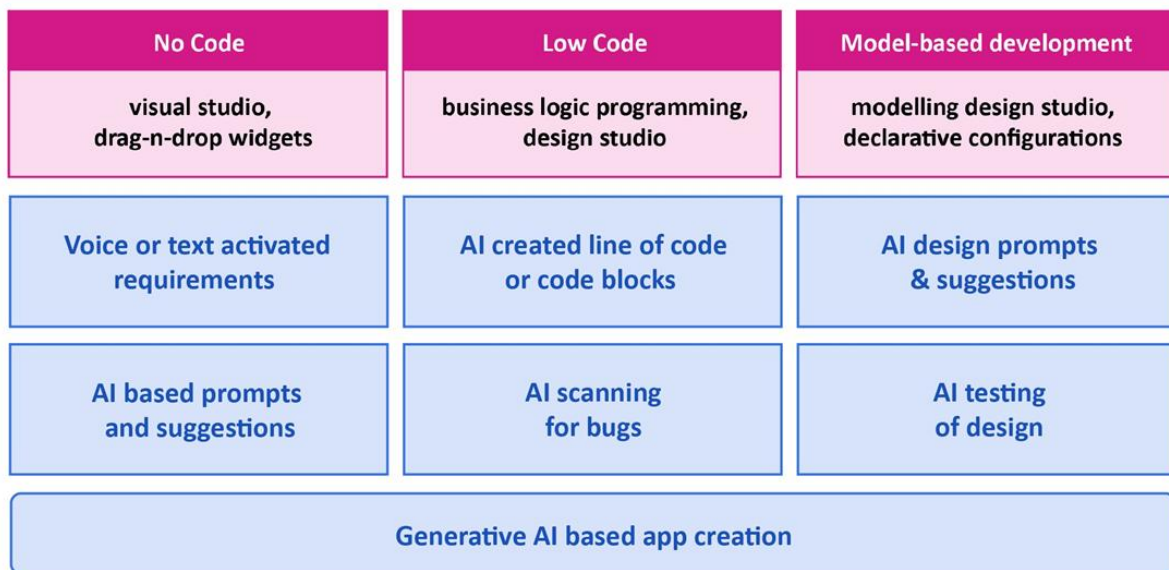
debugging. LLM/GAI technology is not without its own challenges, such as the reliability of the AI output, and this is a factor that will differentiate products in the market. To assess AI-based code assistant solutions, the market requires independent benchmarks, and some have been created for this purpose. For example, BIG-bench (https://github.com/google/BIG-bench) is a collaborative benchmark for probing LLMs.

AI code assistance can help professional developers accelerate their work by prompting with code line completion, as well as offer complete code blocks and components. Testers can be helped with AI by using it to scan software for known vulnerabilities. For citizen developers and other NCLC users, guardrails need to be built into NCLC solutions to prevent AI-caused mistakes and unintended consequences. Developing inside sandboxes is one approach to fully testing an app before releasing it. According to surveys and online forums, developers using AI-assisted coding tools are largely in favor of this technology, finding that it makes their work easier and raises quality.

The infusion of AI into NCLC solutions is shown in **Figure 3**, which adds notes to **Figure 2** according to the type of solution:

- **No code:** Requirements can be entered by voice or text, and the solution will create the app. Users can interact with the AI to refine the output.

- **Low code:** AI can suggest line of code completion or whole blocks of code depending on context. There is AI-based testing, debugging, and suggested fixes.

- **Model-based development:** AI-based prompts and suggestions, as well as AI-based testing.

3. Figure 3: How AI is impacting the NCLC solutions shown in the blue boxes

No Code	Low Code	Model-based development
visual studio, drag-n-drop widgets	business logic programming, design studio	modelling design studio, declarative configurations
Voice or text activated requirements	AI created line of code or code blocks	AI design prompts & suggestions
AI based prompts and suggestions	AI scanning for bugs	AI testing of design
Generative AI based app creation		

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Source: Omdia

Some NCLC vendors are already quite advanced in their use of AI, as indicated in the extended features category of the Universe analysis. Omdia expects the use of GAI technology to be used widely in the NCLC solution market as this technology adoption grows. It will become commonplace for AI to be used to help generate complete applications based on interactive requirements sessions with designers and developers, as well as offer code assistance to professional developers.

Market assessment

Omdia's analysis led to five vendors being selected as leaders, three vendors being selected as challengers, and one being selected as a prospect (**Figure 4**). The Universe chart **Figure 1** shows the results of Omdia's assessment.

4. Figure 4: Vendor rankings in the NCLC solution Universe

Vendor	Product(s) evaluated
Leader(s)	
Mendix	Mendix
Microsoft	Power Apps
Oracle	APEX
OutSystems	OutSystems
Salesforce	Salesforce Platform
Challenger(s)	
HCLSoftware	Volt MX
Pegasystems	Pega Infinity Platform
Zoho	Creator
Prospect(s)	
WaveMaker	WaveMaker

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Source: Omdia

Market leaders

The market leaders appear in a cluster in the top right of the Universe chart and have outstanding performance in the assessment dimensions. Omdia expects all the leaders to perform well on core development, but to perform well in extended features, they need to offer the latest AI code assistance. The leaders in this Universe have these features, either already available or for inclusion before the end of 2023. Omdia also assesses the breadth of the offering, and again, leaders are expected to offer lifecycle management, performance management, and more. We also expect to see the best examples of go-to-market strategies, customer support, and peer-to-peer scores. For the latter, Omdia inspects publicly available feedback on peer-to-peer websites. In assessing innovation, leading vendors are more likely to have patents accepted and/ or pending. Omdia recommends leaders should automatically appear on a prospective customer's shortlist.

Market challengers

Challengers can be more focused on particular market segments with a slightly narrower feature range or are earlier in their maturity cycle and have yet to build out the full spectrum of features that leaders possess. With the right market momentum and feature maturity, Omdia expects some challengers to move

up to the leader ranking. In our opinion, challengers should be shortlisted when their strengths match the customer's requirements.

Market prospects

There are different types of prospect vendors:

- They may offer legacy solutions that have not kept pace with the market.

- They may be startups that lack the breadth of features being assessed but nevertheless have a roadmap and intention to follow the leaders and (if successful) enter the next ranking level.

- They may offer solutions that overlap with the solution space being assessed. In other words, this is not their sweet spot, but rather, the nearest technology assessment space that covers their solution.

The last category applies to the sole prospect in this Universe, WaveMaker. This vendor does not cater to citizen developers; instead, it is focused on helping professional developers accelerate their work.

Opportunities

The NCLC solution space has a long tail of small niche players, as it is one of the busiest markets Omdia has seen. In this report, Omdia assesses enterprise solutions that typically require enterprise-grade capabilities for compliance, security, and systems integrations—aspects of NCLC development that small niche players are less concerned with. Since there is demand for simple no code app development tools aimed at citizen developers, typically building apps for internal use, the niche player market has room to thrive. This market can also pressure the bigger players to innovate, as successful niche no code tools can evolve their capabilities. Therefore, there is an opportunity for market rationalization and acquisitions by the larger players of the best long-tail solutions. Certainly, how AI disrupts this market will be the key factor to watch, and startups are good at seeing new opportunities.

Threats

One vendor expressed the view that AI will massively disrupt NCLC tools. It remains to be seen to what extent, but every vendor this analyst spoke to is embracing the technology and co-opting it into solutions. AI assistance for citizen developers requires guardrails and strong governance to prevent accidents, such as wiping out a corporate database. How well vendors achieve this remains to be seen. A "too early" rush to embed AI could result in rollbacks and reputation damage, as has been seen with some AI-related launches in other spheres. A measured approach with plenty of testing and checks is essential to avoid the mistake of rushing in too early with AI.

Market outlook

While Omdia does not forecast the NCLC space, our view is that this market will continue to grow. The market has accepted NCLC into the mainstream of application development, and the scope for greater use will accelerate. So, as more organizations adopt NCLC solutions, the demand for skills, especially with model-based development solutions, will grow. This will encourage people to invest in NCLC as a career on the back of strong market demand, creating a virtuous growing spiral.

The impact of AI will also be seen in the adoption of the best of new breed solutions exploiting this technology, again adding to market growth.

Vendor analysis

Microsoft, Omdia recommendation: Leader

Microsoft should appear on your shortlist if:

- You require a no code and low code capability in one solution, with the latest advances of AI-based code assistance embedded in the solution. Omdia recommends all solutions in the leader category be shortlisted for their all-around high performance.

Overview

Microsoft Power Apps is an NCLC solution used broadly by professionals with differing skill levels that can create enterprise applications at scale. The infusion of AI-based Copilot into the Power Platform has had a dramatic impact on the market, accelerating the way developers work. Satya Nadella, Microsoft CEO, recently said in an earnings call that the Power Platform has surpassed $2bn in revenue over the past 12 months, a 72% YoY increase, making it one of Microsoft's fastest-growing businesses. Microsoft estimates Power Apps has over 7 million monthly active developers, and end users of Power Apps applications attract over 100 million monthly active users. The vendor also uses the platform to create its Dynamics 365 suite for sales, field, marketing, and talent services.

Application developers are faced with multiple factors when building enterprise-grade applications:

- Budget, skills availability, and time constraints
- Site hosting and data residency
- Cybersecurity and governance
- Connecting to data silos and integration with business services
- Responsive sites for all form factors
- Accessibility and regulatory compliance

Microsoft Power Apps is an NCLC solution that addresses all these concerns and accelerates development, helping to reduce the complexity of building enterprise apps. Power Apps is built on the Microsoft Power Platform that brings NCLC automation to a range of enterprise business services:

- **Power Apps:** NCLC application development
- **Power BI:** Business analytics
- **Power Pages:** Website development
- **Power Automate:** Workflow automation
- **Power Virtual Agents:** Intelligent virtual agents and conversational bots

Supporting these services are over 1,000 data connectors, Microsoft Dataverse (Microsoft's built-in data platform), and Azure-managed cloud environments.

Power Apps and the related Power Pages (a fully managed SaaS service on Azure for web development) add low code capability to a customer-centered application experience and development experience. Developers typically build citizen services, business processing, customer self-service, FAQ websites, warranty registrations, partner onboarding operations, and more. The range of industry verticals is wide, but Microsoft mentions in particular state and local government, financial services, high tech industry, energy, manufacturing, healthcare, higher education, and not-for-profit organizations.

Microsoft has added Copilot to the Power Platform to jump-start projects guided by AI, targeting three user roles:

- **End-user developers** will have a "conversational experience" with Copilot, giving their requirements before refining it.

- **Site administrators** can ask Copilot questions about sites that are live or the inventory around parts pages, using Copilot to monitor the health of websites.

- **The customer's customers** can ask questions based on the internal corpus of knowledge for the service they are using.

Microsoft finds government departments are popular users of this platform—they need to modernize their constituent and citizen services at speed, and Power Apps and Power Pages fit this requirement well. Within days or weeks, they can have apps running for testing. Security and data sovereignty are key issues and are available with Microsoft's products out-of-the-box.

Microsoft Power Apps is designed to support enterprise applications at scale, with over a million end users and 33 million Power Platform users running on top of Azure. The solution can be used by novice developers, business users, or professional developers kick-starting projects, and it provides an abstraction layer over Azure. It also offers a built-in full application lifecycle management experience. The solution is designed to provide the whole range of NCLC development experiences, from simple applications built by citizen makers requiring no code development to tech-savvy makers and professional developers.

The NCLC solution space has been disrupted by the progress of GPT from OpenAI, an organization that Microsoft has invested in—most recently injecting $10bn in a third phase at the start of 2023. CEO Nadella said that more than 36,000 organizations have already used existing AI-powered capabilities in the Power Platform.

Microsoft is infusing Copilot across the Power Platform and talks in terms of the "Copilot Era," with its AI as a real-time collaborator for

- Generating content

- Sparking creativity

- Automating cognitive tasks

- Performing work completion tasks

The most recent enhancements to the Power Platform include the following:

- **Copilot:** Copilot for makers, Copilot for end users, integration with Power Virtual Agents, with natural language bot (Copilot) and conversational boosters

- **Data workloads:** Virtualization, Azure Synapse Analytics, and Power BI integration

- **Professional and hybrid development:** Power pipelines, component catalog and discovery, and Power Platform Developer Hub

- **Collaboration:** Co-authoring, embedded Teams chat, and link unfurling

Application lifecycle management features are built into the Power Platform and are available to Power Apps developers. These help developers manage projects, develop and test environments, create a sandbox, deploy into production, etc. Version control is built in, and the user can use any DevOps CI/CD solution; Microsoft offers GitHub and Azure DevOps out-of-the-box.

The Microsoft partner ecosystem has 66,000 individuals through partner organizations engaged in dedicated boot camps. Microsoft has thousands of partners that co-sell Power Apps and provide consulting services, including over 120 low code specialized partners.

A customer use case is Rabobank:

- Rabobank uses Power Platform to automate 60,000–80,000 customer calls every month—up to 50% of its total call volume.

- Call analysis that used to take three weeks can now be done in three minutes.

- Call forwarding accuracy is 99.1%, far higher than previously achieved.

- Rabobank developers, from citizens to IT pros, use the tool.

Omdia has seen Microsoft leap ahead with its Power Apps solution to become one of the most significant players in the NCLC space. While the disruption caused by AI poses a challenge for many vendors in the NCLC space, this is a huge opportunity for Microsoft. It is a prime investor in OpenAI, a source for much of the disruptive AI. The roadmap for adding AI to the Power portfolio is shown in **Figure 8**.
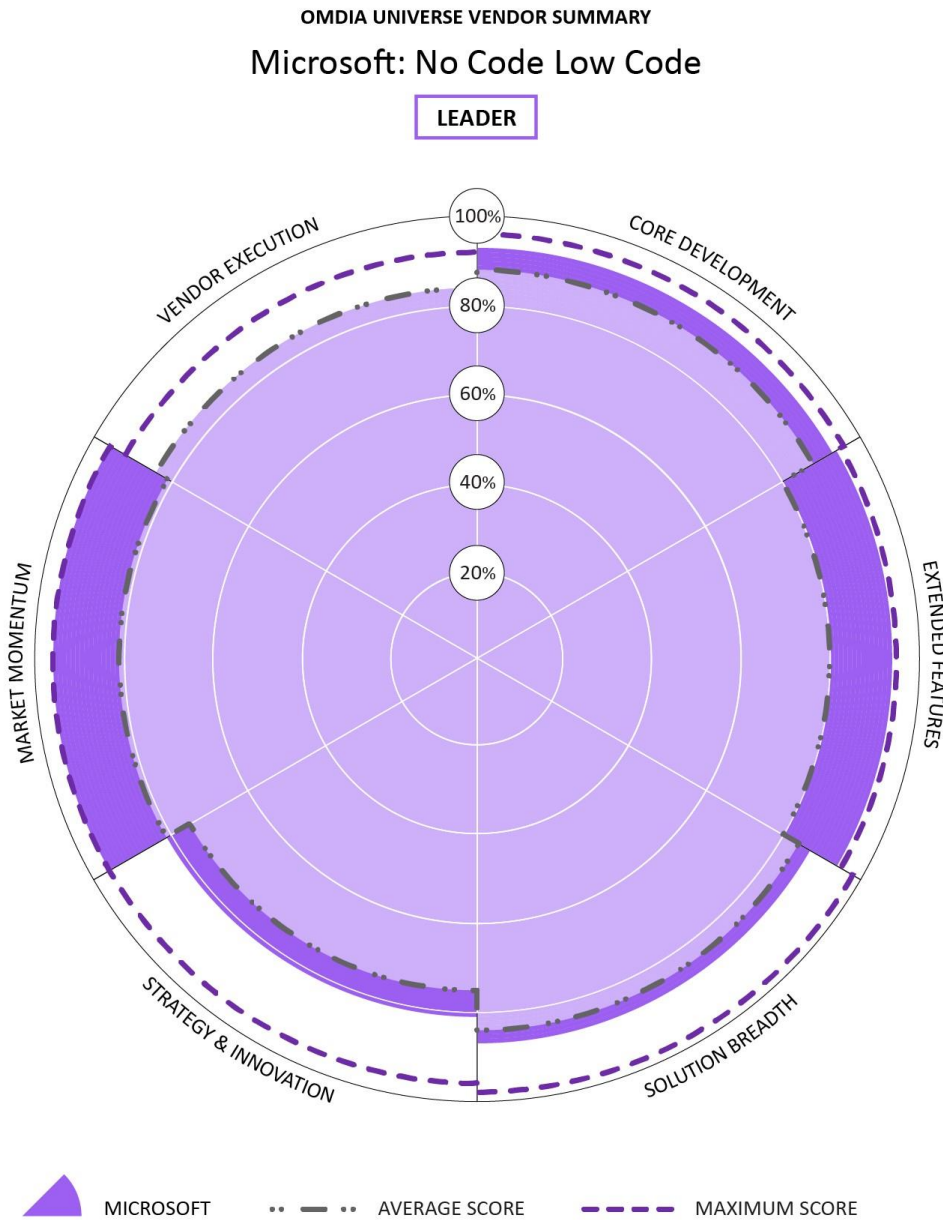
5. Figure 8: Microsoft is adding Copilot and generative AI capabilities into Power Apps
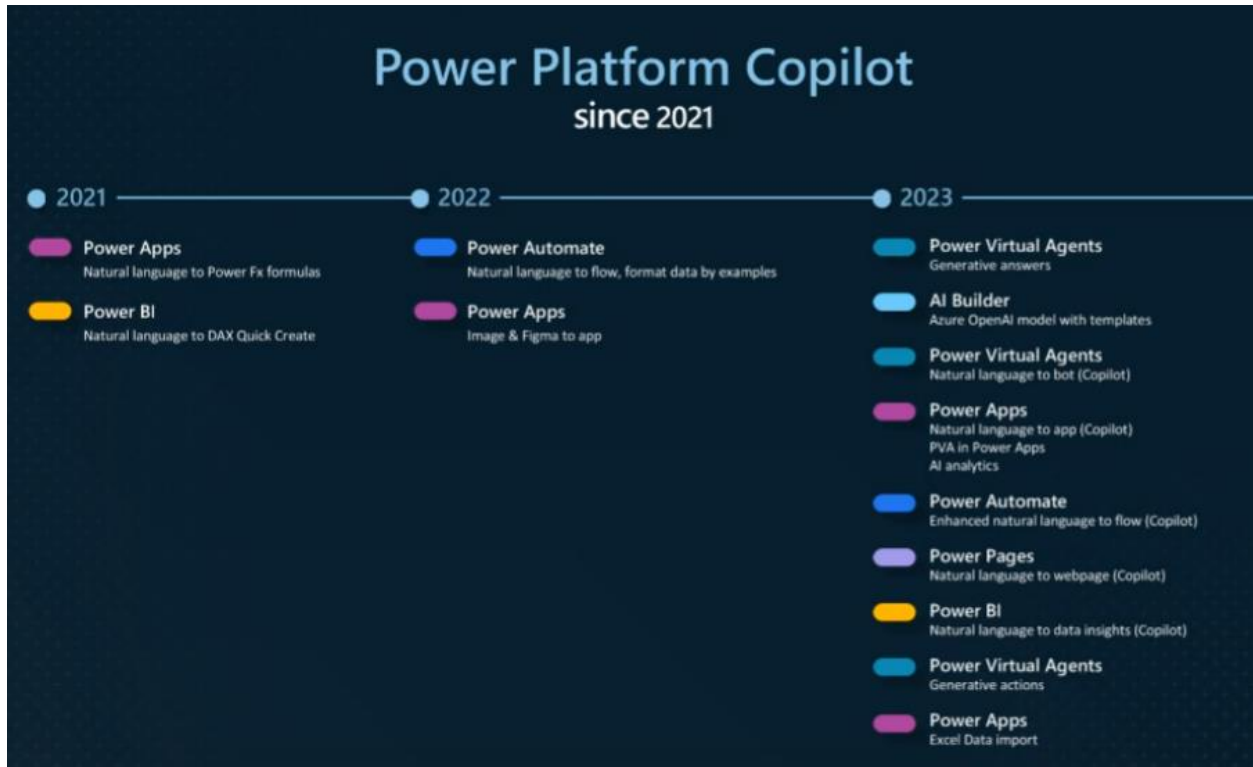
Source: Microsoft

Omdia's Universe ratings for Microsoft are shown in the radar graph, **Figure 9**.

6. Figure 9: Omdia Universe ratings – Microsoft

OMDIA UNIVERSE VENDOR SUMMARY

Microsoft: No Code Low Code

LEADER

Source: Omdia

Strengths

- Microsoft is leveraging the AI technology from its partnership with OpenAI and is doing so in a major transformation program, including embedding Copilot and other AI technology across the Power Platform portfolio.

- Microsoft Power Apps achieved one of the highest scores in Omdia's technology capabilities assessment (Universe chart x-axis) and was rated in the top group for strategy and execution (Universe chart y-axis). Its capabilities span no code to low code.

- Microsoft has a long history of nurturing its professional developer community, and it leverages this market position to bring the same level of customer support to its NCLC users.

Limitations

- Power Apps has limitations in what can be deployed to containers, and Omdia believes these restrictions should be removed. Containers and forms do not work, and the data table, PDF viewer, and web barcode scanner are not supported inside a container.

- Power Apps requires a runtime instance of the NCLC platform to be able to execute, so generated apps are tied to the platform. This may be an issue for some users.

- Power Fx, the programming language for developing in Power Apps, is new and may deter some users from having to learn a fresh language rather than use a familiar standard language. Microsoft makes the fair point that Fx is designed for low code use with familiar Excel-like concepts and will be used across the Power Platform. Furthermore, developers can bring components written in languages such as TypeScript or React UX components wrapped in the Power Apps Component Framework, .NET plugins in Dataverse for custom logic, or any web service with a REST API.

Appendix

Methodology

Omdia Universe

Omdia's rigorous methodology for a Universe involves the following steps:

- Omdia analysts perform an in-depth review of the market using Omdia's market forecasting data and Omdia's enterprise insights survey data.

- Omdia creates a matrix of capabilities, attributes, and features that it considers to be important now and in the next 12–18 months for the market.

- Vendors are interviewed and provide in-depth briefings on the current solutions and future plans.

- Analysts supplement these briefings with other information obtained from industry events and user conferences.

- The Universe is peer-reviewed by other Omdia analysts before being proofread by a team of dedicated editors.

Inclusion criteria

Omdia provides a high level summary below of topics that reflect key solution capabilities. These are also the topics that drive our assessment of the NCLC solution comparison.

Solution capability

These aspects are scored on the x-axis of the Universe chart.

Core development

- Development
- Mobile app development
- Form and UI/experience building
- Deployment
- API and data services
- Scalability

Extended features

- Process and workflow orchestration
- Architecture and cloud native computing
- AI-related

- Integrations

- Security and access control

Solution breadth

- Applications supported

- Performance monitoring

- Messaging and communications

- Application lifecycle management

- Compliance

- Analytics, dashboard, and reporting

Strategy and execution

These aspects are scored on the y-axis of the Universe chart.

Market momentum

- Company and product history and maturity

- Net Promoter Score (NPS) if available

- Global reach

- Vertical and horizontal focus

- Revenue and annual growth

- High level customer-related questions

Strategy & innovation

- Roadmap

- Licensing

- Target market and users

- Deployment options

- Competitive differentiation

Vendor execution

- Partner and systems integrator ecosystem

- Technology partners

- Technological innovation

- Customer support

- ROI

- Peer-to-peer customer score

Market penetration

This metric scores the size of the circle (z-axis) on the Universe chart.

- Revenue-based metric

Further reading

Generative AI: The impact of AI-based autocoding on software development (March 2023)

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