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Introduction: Microsoft Dynamics 365 for Operations and the Evolution of Cloud Computing

The combination of technology and services that goes by the name *cloud computing* has undergone a number of major transformations in its brief existence, and in the process has already changed how technology and business interact in significant ways. The journey has always been more than merely a question of moving from on-premise deployments to the cloud: Whether it's a matter of shifting IT spend from a capital expenditure to an operations expenditure or moving strategic business processes from on-premise data centers to elastic cloud resources, cloud computing has been a force for good in the evolution of how technology can be deployed to further business outcomes.

The availability of Microsoft Dynamics 365 for Operations running in the Microsoft Azure Cloud, positions cloud computing for one of its more dramatic and meaningful shifts. This combination of a leading enterprise software suite purpose-built to run in a leading cloud platform has enormous potential for further transforming how businesses deploy technology. When combined with the rest of Microsoft's applications, technology, and services, in particular, Microsoft's new lifecycle management tool, Lifecycle Services (LCS), Dynamics 365 for Operations represents an important inflection point for Microsoft, its customers and partners, and its competitors.

Microsoft Dynamics has asked Enterprise Applications Consulting to take a look at Dynamics 365 for Operations, LCS, and other key components of the Microsoft stack in order to assess their potential in the market. To this end, EAC interviewed customers and partners of Microsoft, and reviewed the feature sets of Dynamics 365 for Operations, LCS, and Azure. The result of this research shows an impressive combination of functionality and services that leverage cloud computing in unique and valuable ways. Dynamics' new cloud offerings will allow Microsoft and its partners to deliver increased value to businesses and reach a broader set of end-users than was previously possible in the cloud or on-premise. While Microsoft and its partners still have some ground to cover before the combined promise of Dynamics 365 for Operations, LCS, and Azure is fulfilled, it's clear from its current plans that Microsoft is setting the stage for a new transformation in cloud computing that will be hard for others to follow.

The State of the Art: Customer Pain and Customer Promise

The myriad problems that Dynamics AX 7, LCS, Azure, and related technologies are designed to solve have their origins in the structural dysfunction that has characterized the enterprise software market since the beginning of the century. The growing importance of the internet and internet commerce, the increasing focus on customers and customer interaction, and the new mobile and touch-enabled technologies that have come to the fore in the last dozen years have highlighted enormous gaps in the client/server-based, transaction-processing-centric business technology paradigms of the past.

These older, on-premise technologies have been found to be ill-suited to adapt to the new business requirements that have emerged in the last two decades. The rigidity of the data center and its largely transactional systems has proven to be major barriers to business innovation. This is particularly true in

a global economy where the profitability window of new product introductions is measured in months, and innovation cannot afford to wait for technology to catch up, and where customers are increasingly “digital natives” who expect to interact across the globe with one another and their vendors using mobile and touch-based technologies.

Early SaaS pioneers attempted to deal with some of these issues, with a modicum of success. A smattering of business processes, particularly CRM, moved to the cloud early on, paving the way for greater acceptance of cloud-based processes. But while CRM and other non-ERP business processes, like email and storage, took up full-fledged citizenship in the cloud, the core of the enterprise, ERP and related systems such as warehouse management, order management, and finance, remained in the on-premise data center, as did the back-office middleware, database, and other platform functionality on which business computing is dependent for much of its day to day functionality.

This meant that core processes still dependent on ERP were stuck in older paradigms of implementation, innovation, and usability. In most cases, the needs of businesses for rapid time to market and innovation were trumped by the relatively complex, time-consuming, and rigid processes that were the standards for the implementation and transformation of on-premise systems. While innovation was still possible, and many implementations were delivered on time and on budget, by and large the ability to adapt technology to serve the needs of business continued to be hampered by the dependencies of the back office to on-premise, inflexible systems and the methodologies designed to support them.

The result was that enterprises struggled to meet rapidly changing customer expectations for both new user experiences and new commercial experiences based on a much more rapidly changing and modernizing consumer world. This struggle wasn't just for the hearts and minds of the customer either – companies were confronting an employee base, increasingly made up of millennials, who also expected new user experiences in the workplace to match those on their mobile devices.

Meanwhile, despite attempts to bolt on and extend existing on-premise platforms to support cloud functionality, the older dysfunctions based on the limits of on-premise technology continued – between IT and business, between business and customer, and between customer and service provider.

Dynamics AX 7, LCS, and Azure: The Fundamentals

Microsoft has made a three-pronged case for why it is uniquely positioned to help customers break out of these older paradigms. Its focus on building out what CEO Satya Nadella calls an “intelligent” cloud based on Azure, combined with a renewed look at innovating around personal computing, are helping position Microsoft as an important vendor in the paradigmatic shifts taking place in the market. The third leg of Microsoft's strategy, which focuses on innovating around productivity and business process, gives Dynamics's offerings, in particular AX and CRM, a strong position in the overall strategy. The position of Office 365 as a core part of the vision, and its integration with the Dynamics offerings, lends further credibility to Microsoft's goals.

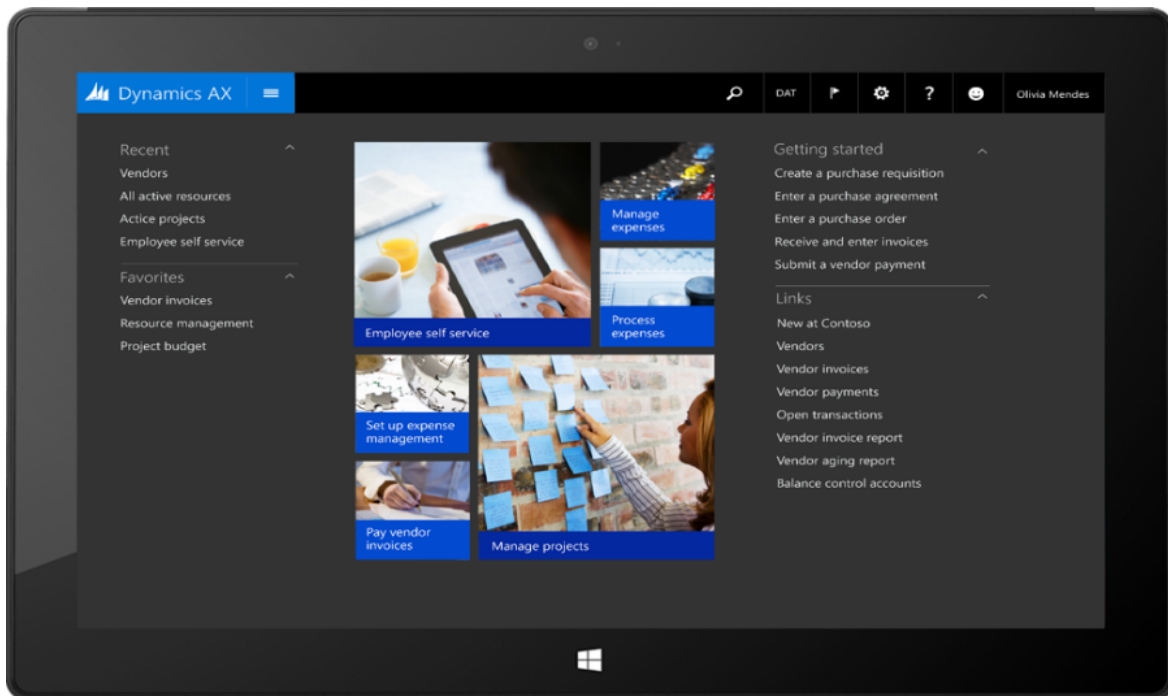
It is in this strategic context that Microsoft is bringing Dynamics AX 7 and LCS, running on Azure, to the market.

Dynamics AX 7

Dynamics AX 7 provides the functional core of the overall strategy, offering both the business processes that enable greater productivity, as well as the native cloud capabilities that are essential to fulfilling the promise of the intelligent cloud. This continues the evolution of AX as the flagship enterprise software suite for Microsoft, cementing it closely to the rest of the overall Microsoft technology and business vision.

Dynamics AX 7 fulfills this role in three fundamental ways: it runs natively in Azure, it can support hybrid on-premise/cloud deployment models, and its user experience can be deployed on nearly any device that runs a modern browser, making it accessible to a wide range of Microsoft and non-Microsoft mobile and desktop devices (see Figure 1). This combination of functionality allows the business processes enabled by Dynamics AX 7 to leverage the full range of services, development tools, devices, and platform technology that Microsoft delivers to the enterprise today. This in turn gives Dynamics AX 7 a potential competitive advantage by being as closely tied as possible to a cloud platform – Azure – that has co-evolved with AX since its inception, something none of its competitors can boast.

Figure 1: Dynamics AX 7 Leverages HTML 5 to Run on Mobile Devices



Source: Microsoft

Lifecycle Services

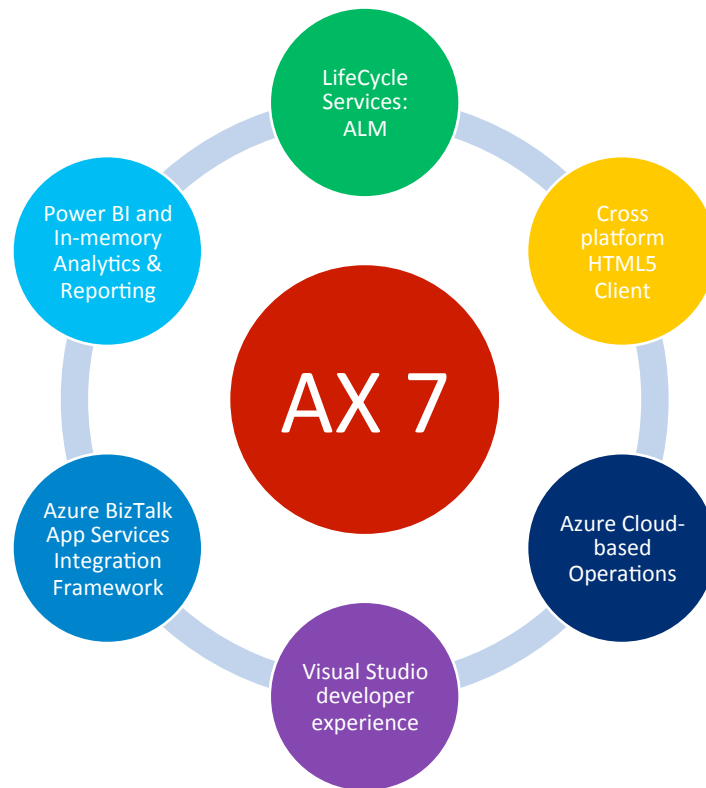
The most striking example of this co-evolution, and solid proof that Microsoft has made leveraging Azure an important goal for Dynamics AX 7, can be seen in LifeCycle Services, or LCS. This Azure-based service represents a remarkable re-imagining of application lifecycle management (ALM) services that is truly unique in the market. The main advantage of LCS lies in its ability to manage the entire lifecycle of a Dynamics AX 7 implementation, from conference room pilot, through go-live, and on to post-implementation support, by using LCS, running in Azure, to track the implementation as it evolves.

This capability in turn allows LCS to take the concept of ALM to an entirely new level. The ability of Dynamics AX 7 to run in Azure, and the ability of Dynamics AX 7 to support a hybrid deployment model, mean that development and test instances of an implementation can be run in Azure even if the ultimate deployment is destined for on-premise. This greatly facilitates the use of IT resources, as instances can be spun up and down as needed without deploying physical resources and with minimal human input. Importantly, Azure's ability to model the implementation as a conference room pilot, modify the model as the statement of work evolves, use the final model to generate the production system, and then maintain the model as a living document that is used to support and change the production system is unparalleled in the enterprise software world.

This is particularly valuable for performing user acceptance testing at much earlier stages in the implementation process than has been possible both on-premise and in the cloud. New processes or reworks of existing processes can be stood up in a test system and tested by the actual users of the process. Those tests can be used to drive modifications and changes in the implementation that promises to lower costs, ensure maximum user buy-in and acceptance, and result in software that more accurately captures the needs of the business user.

Basing production systems on a model-driven system running in the cloud also means that new configurations, integrations to other Dynamics or third party products, value-added partner IP and other potential add-ons to an implementation can be tested and deployed in the cloud. The test instance can, if needed, be set up as a full replica of the production system. The Azure-run test instance can be modified until the test is successful, and then the changes can be literally copied to the existing production instance using Azure's deployment services.

Figure 2: Dynamics AX 7, LCS, and Azure



Source: Microsoft

The significance of these capabilities in streamlining the design, implementation and on-going support of Dynamics AX 7 cannot be over-emphasized. The issue of how to efficiently manage the full lifecycle of an enterprise software suite has bedeviled vendors, service providers, and customers since the dawn of the enterprise software market. By putting the full process in the cloud, where literally every click and every change can be monitored, and by basing the implementation lifecycle on a fully-functional modeling system, also running in the cloud, Microsoft has removed an enormous amount of complexity – and ultimately, time and expense – from what has historically been a process fraught with problems for customers, partners, and vendors alike.

The opportunity, which the early customers and partners EAC spoke to have confirmed, is that implementations using this combination of Dynamics AX 7, LCS and Azure can take place more quickly and at a lower cost to the customer, require fewer change requests as the project unrolls, and deliver better alignment with business goals than was possible using on-premise technology and methodologies. Importantly for Dynamics' competitive positioning, this ability to combine the best in cloud-based system management with ALM is simply not possible with any other cloud-based ERP suite today.

Azure and the Microsoft Cloud

Using Azure as the cloud platform for Dynamics AX 7 enables the use of a wide range of services running in Azure that can add significant value to a Dynamics AX 7 implementation, highlighting what Microsoft calls its Microsoft Cloud capabilities. Microsoft Cloud services include Office 365 and Dynamics CRM, as well as Power BI, Microsoft's analytics toolset. Azure SQL, the cloud-based version of SQL Server, BizTalk, SharePoint, Visual Studio, and pretty much the full complement of Microsoft systems and development technology, are also available as cloud services.

While all of these services support non-Microsoft technologies, their co-evolution with the Dynamics product set means that Dynamics AX 7 and LCS are arguably better integrated with Microsoft Cloud services, and better able to deliver their value to Microsoft's customers. At a minimum, this *first among equals* position is also unique in the market, as no other enterprise vendor has this breadth of product running in its own cloud.

The status of Azure as a fully functional cloud platform also adds important security, redundancy, and failover capabilities to Dynamics AX 7 that, as early customers told EAC, makes a huge difference in the overall value of Dynamics AX 7. At this point in the ever-changing world of cyber security and safety, even the very largest companies in the world have trouble maintaining their in-house systems as securely as necessary. Deferring this responsibility to Microsoft and its partners is highly cost-effective and provides a level of support for advanced security and failover that early Dynamics AX 7 customers acknowledge is increasingly hard to acquire and maintain.

Basing the new Dynamics AX 7 functionality on Azure also sets up Dynamics customers for the deployment of innovative technologies, such as machine learning and *internet of things* (IoT) capabilities, that Microsoft and its partners are increasingly delivering as services running on Azure. The simplicity of both the consumption and deployment model for Azure services vastly simplifies the use of these advanced services by Dynamics customers. This is hugely advantageous for companies that want to test or pilot advanced technologies without making an oversized commitment in terms of cost or manpower: Turning the capabilities on, or off, as Azure services, greatly simplifies and lowers the risk of testing and acquiring new innovations. This is equally advantageous for Microsoft partners that want a relatively easy way to bring new IP to the market and make it readily available to the Microsoft customer ecosystem.

How Dynamics AX 7, LCS, and Azure Change Everything

EAC's review of these three core pillars of Dynamics' strategy shows that Microsoft has understood the problems and opportunities in the market and responded with a uniquely compelling solution. While it's important to note that the value of what Microsoft is offering will take some time for Microsoft and its partners to fully develop, and for the majority of its customers to sign on to, the combination of Dynamics AX 7, LCS, and Azure will be able to immediately deliver noticeable value to Microsoft's customers and significant competitive differentiation for Microsoft and its partners.

Customer Benefits

The benefits to customers of Dynamics AX 7, LCS, and Azure are significant, and hold the promise of aligning business needs and technology in particularly advantageous ways. The benefits start with the user experience that Dynamics AX 7 and the components that make up the Microsoft Cloud are able to offer. Broad-based support for Microsoft and third party mobile, touch-based devices, and the entire Windows 10 device family, provide an important starting point for customers: being able to deploy the capabilities of Dynamics AX 7, partner products, and Business Cloud services on an ever-increasing list of devices will help expand the overall usefulness Dynamics AX 7 in the enterprise. This expansion effectively means that Dynamics AX 7 and its associated products and services will be able to automate and bring new efficiencies to classes of users that previously had been disconnected from core business processes and services. This will also allow customers to better leverage their investments in Microsoft technology as well as better align their business needs and technology usage.

Customers will also benefit from the automation of the conference room pilot to on-going support process. Perhaps the biggest benefit comes from the combination of business process modeling and cloud deployment that Dynamics AX 7, LCS, and Azure provide: being able to model and perfect business processes – and make them available to users and other stakeholders to test, critique, and improve – will significantly improve the alignment of business needs with technology. By effectively going live with a system that has been tested, perfected, and approved by its business stakeholders, customers will be able to significantly limit the all-too-frequent problems that companies face when users confront a poorly designed system they neither understand nor approve of.

This capability in turn removes a whole raft of potential problems relating to cost-overruns, delays, and other missteps that result in the failure of over half of enterprise software projects to achieve their business goals. While LCS cannot completely bulletproof the implementation process, anything that can help reduce the problems that poor implementation practices and a lack of alignment produce will have a huge impact on user acceptance and customer satisfaction. At a minimum, LCS will make it possible to bundle implementation best practices as a service and provide much greater predictability to the customer regarding the overall cost and complexity of a project.

The ability to use services like LCS and Azure while running Dynamics AX 7 on-premise allows customers to exercise the maximum choice in deployment scenarios without sacrifice. While EAC expects companies to increasingly opt for cloud deployments, the hybrid scenarios that Dynamics AX 7 and LCS support will be in the market for a number of years.

Finally, customers will be able to easily access advanced innovative technologies – like machine learning and IoT – as Azure services, with all the ALM capabilities provided by LCS. This *innovation as a service* function will help ensure that existing investments in Dynamics AX 7 and related technologies will continue to pay off as new and innovative services become available in Azure.

Partner Benefits

Microsoft's partners stand to reap a number of important benefits from the combination of Dynamics AX 7, LCS and Azure. It's important to note that the illicit benefit of being able to charge for change requests that result from poor project planning, in addition to the ability to charge for bread and butter hardware and systems software deployment, will go away as these new technologies are deployed in the market. That will require partners to double down on something Microsoft has been pushing for years: move further up the value chain by providing unique IP and services to customers.

Moving partners up the value chain is a particular benefit of LCS. The business modeling component of LCS allows partners to effectively "bundle" unique IP, processes, and methods into a repeatable service that is staged in Azure and managed by LCS; and sold via LCS – Dynamics is leveraging the Azure Marketplace to allow partners to sell LCS-based methods and services that can be developed and deployed in the cloud. This should help partners commercialize their IP and make it available much more broadly than if they sold it exclusively on their own commerce sites.

Partners that really care about customer satisfaction – hopefully an ever-increasing majority – will also benefit from the ability of LCS to vastly improve the customer alignment and approval process, and along the way limit the change requests, missteps, and other problems that can hinder project success. The conference room pilot to on-going support that LCS provides further improves overall project success. Integration, scalability, and security – all of these improvements benefit partners significantly. In fact one of the early partners using LCS told EAC that these capabilities allow him to reduce his company's change orders significantly, and that the customer satisfaction and trust in his company that the reduction produced was priceless.

This partner also told EAC that using LCS allows him to pass savings in hardware, systems software, and other components on to his customers. These savings, combined with better project management and support, has allowed the partner to lower his total project costs significantly: this makes the partner more competitive and further contributes to his profitability and overall customer satisfaction ratings.

This is an important aspect of what LCS brings to the table: a way to embody deployment best practices as services that provide not just lower costs and greater efficiencies, but also provide a more predictable implementation process for both partner and customer. This in turn provides an incentive to Microsoft partners to continue to build out a portfolio of cloud-based services that can support the current needs of customers as well as extend their use of Microsoft and non-Microsoft technology into the cloud as their needs evolve.

Microsoft Benefits

The benefits to Microsoft as a whole, and Dynamics specifically are manifold. The ability of Dynamics AX 7 to leverage the full power of the Microsoft Cloud gives Microsoft a showcase for its productivity and business user capabilities, which CEO Satya Nadella has clearly bet his company's future on. Offering these capabilities to the broader enterprise software market also provides Microsoft with an

opportunity to highlight the support for heterogeneity that is a key part of the new Microsoft Nadella is promoting: this support of heterogeneity bodes well for Microsoft overall, as broad-based software and hardware heterogeneity is the standard in the enterprise.

The ability of Dynamics AX 7 to broaden the user base of enterprise software in a given enterprise also benefits Microsoft significantly. The attach rate of the Dynamics AX product family has always been high, and EAC expects it to rise even higher as the benefits of combining Dynamics AX 7 with Office 365, Power BI, and other Microsoft Cloud offerings become more evident in the market. This is true for Windows tablets and new products such as Surface Hub as well.

The combination of Dynamics AX 7, LCS, and Azure will also allow Microsoft to support bigger and more complex deployments, allowing it to move upstream into larger and larger enterprises. This in turn will allow Microsoft to challenge a broader range of competitors in a broader section of its market, and provide more opportunities for its partner ecosystem as well. The native cloud capabilities of Dynamics AX 7, combined with LCS and Azure services, will also give Dynamics a strong position against other cloud-based ERP offerings that are neither based on a specific cloud platform nor have the ability to track the application lifecycle in any way similar to LCS.

Finally, as noted above, the ability to stage innovative new technologies as Azure services – machine learning and IoT, to name just a few – allows Microsoft to provide strong value-add to existing customers and give them a solid – and relatively easy-to-consume – path to innovation.

Conclusion: Why Microsoft? Why Now? Where to Start?

It's clear that Microsoft has made some very crucial and highly strategic bets, when it comes to the combination of Dynamics AX 7, LCS, and Azure. EAC believes that these bets have been extremely well-placed, and the uniqueness of the combination of these three offerings bodes well for Microsoft, its partners, and most important of all, its customers.

The ability to innovate in the cloud, in the enterprise software stack, in the hardware and devices market, and in personal productivity is unique to Microsoft. No other vendor can offer this combination of product and services. This has been true for some time, and until recently the sum of the parts failed to exceed the whole. What has changed in the last few years, and has accelerated since Nadella took the helm of the company, is Microsoft's ability to leverage its broad-based capabilities across these previously impenetrable silos, and truly make the combination of Microsoft's technologies and services its unique strength in the market.

This capability has come at the perfect inflection point for the broad-based market play that Microsoft is now making. The forces of consumerization in the enterprise have changed not just who the intended user of innovative technology is, but also how that technology is delivered, playing perfectly into Microsoft's devices and its support for the devices of others. This in turn has broadened the expected user base in the enterprise, and has led to a recognition that improved personal productivity is a necessary adjunct of this goal, just as Office 365 and other Microsoft services have matured and reached

their stride. In addition, the highly dynamic business environment of today has made the need for technology that serves business, in the ways that businesses need it, not just how engineers design it, an imperative for all companies. This has set the stage for using the cloud and advanced services such as LCS to better mirror the true needs of businesses directly in the technology they deploy.

The best part of Microsoft's new offerings, particularly from the all-important customer's point of view, is that basing this innovation on the cloud allows the deployment of innovation to occur at a pace that makes the most sense for the customer. Indeed, this is what the combination of Dynamics AX 7, LCS, and Azure promise: real innovation at a pace that makes sense for the customer.

This *innovation at pace*, in turn, best describes how customers should proceed with the unique opportunity that Dynamics AX 7, LCS, and Azure offer. There's a lot to this combined offering, more than can be fully described in a report of this size, but that's perhaps the best part of all. Most companies, when looking at the pain points, or the unrealized opportunities in their enterprises, will find a solution, or the path to a solution, in what Microsoft is offering. Whether the solution they find will ultimately be the one they deploy remains to be seen. It's clear, however, that with these three offerings, Microsoft has a story to tell about technology, innovation, and the enterprise that is worth listening to, and acting on. Another thing is also clear: The intersection of cloud computing and the enterprise is poised for a change that will reverberate across the industry for some time to come.