WHITEPAPER

A Guide to Overcome Innovation Barriers in Your Modernization Journey

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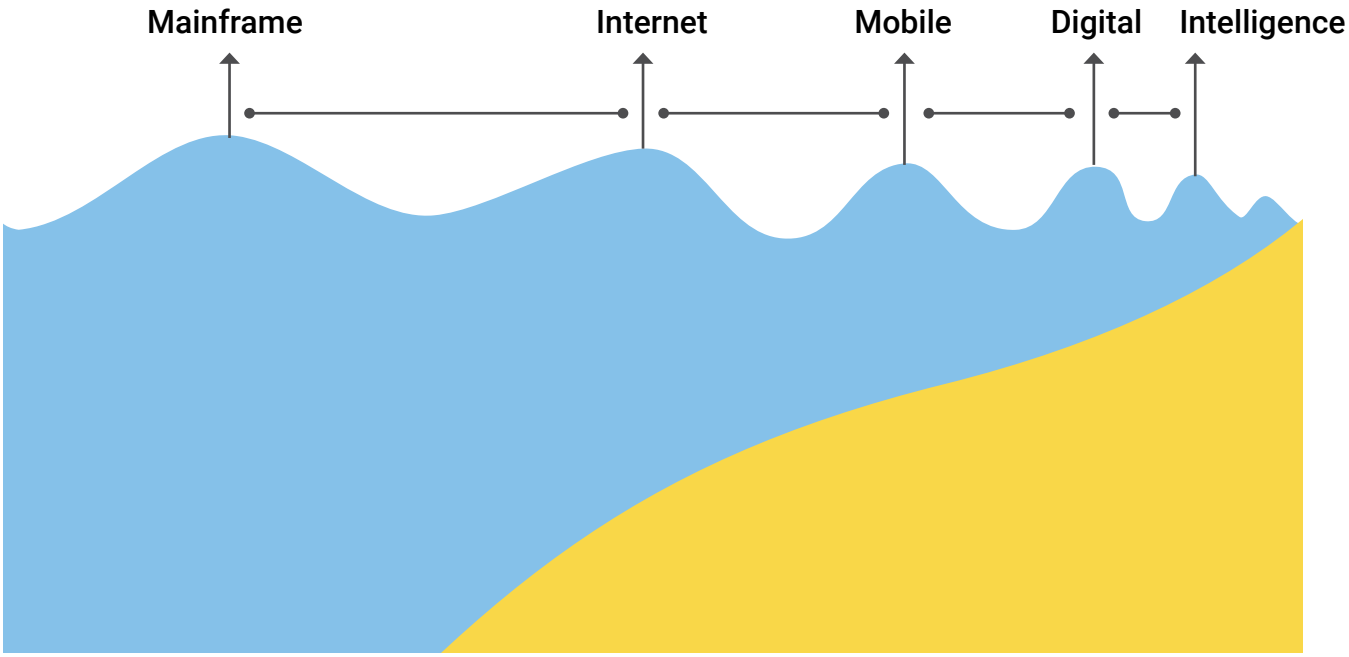
Introduction

Technology lifecycles have been diminishing with newer technology waves and trends arriving and disrupting the industry. Given this scenario, organizations must either adopt them at the beginning or invent newer technology trends themselves. Failing to ride on these waves has been disastrous for a large number of organizations who were toppled from their market position as leaders. Startups and New Entrants, with a clean slate, disruptive value proposition and backed by funding tend to easily adopt new technologies and trends. Older companies who have missed a couple of waves lose their competitive edge and struggle to compete with the market leaders and end up in a scenario where they are forced to watch other new entrants and early adopters overtake them.

The cloud market has shown remarkable resilience in 2020 with Gartner predicting that worldwide public cloud end-user spending will grow by 18.4% in 2021. In another study, O'Reilly has suggested that 55% of organizations say the use of microservices has been a complete success. The need for remote working environments on a global scale has increased the demand for cloud capabilities. Organizations choose to migrate to cloud and microservices architecture to build customer centric and scalable solutions that are reliable in the future. That dominate the marketplaces. While these companies invest heavily on new technologies to address the customer demands in current conditions, they fail to make investments in technology that the future demands.

This is why a lot of companies are stuck with legacy systems that are complex and are impossible to scale up. Obvious reasons like misplaced priorities, bad processes, poor decision making can be blamed, but the main reason for this negligence is organizations' tendency to succumb to the whims of their customers. Customers are a crucial piece in the puzzle, but their unwillingness to adapt to new technologies should not dictate organizations' investments. Disruptive technological changes usually have two kinds of performance attributes: those not valued by the customers and those that are valued by the customers but improve rapidly only to invade established markets later. Well established organizations that are unprepared will be devoured by the wave and new players will start dominating.



The time duration between every two disruptive technologies is shrinking.

Modernization Spectrum

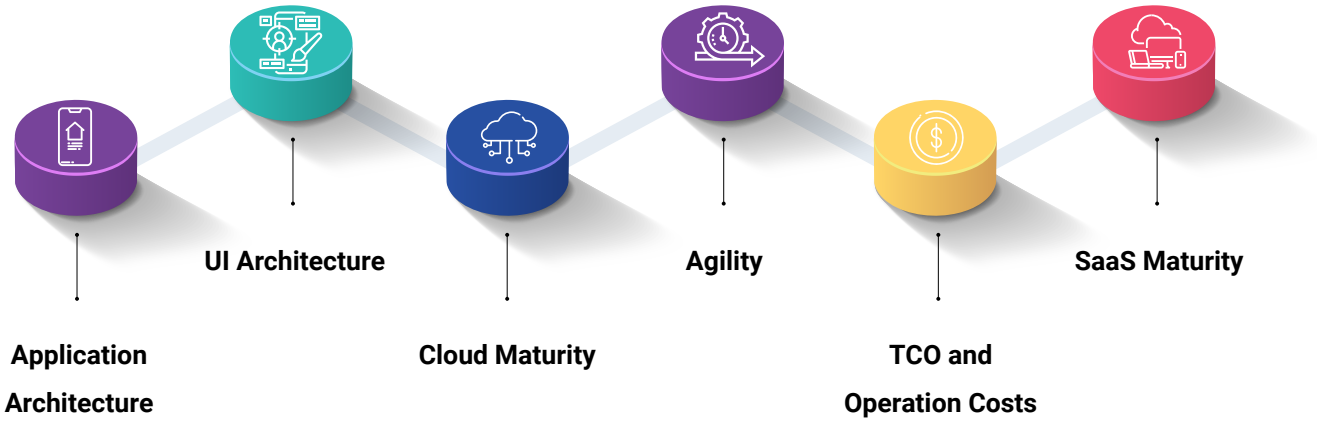
There are certain businesses that don't see a need to modernize their systems because they have virtual monopoly and the barriers to entry into that segment/market are high. Many of them continue to use legacy technologies and prefer to follow traditional Software Development and Release practices. They miss several technology trends and struggle to catch up with new entrants who offer superior services courtesy of the new technology.

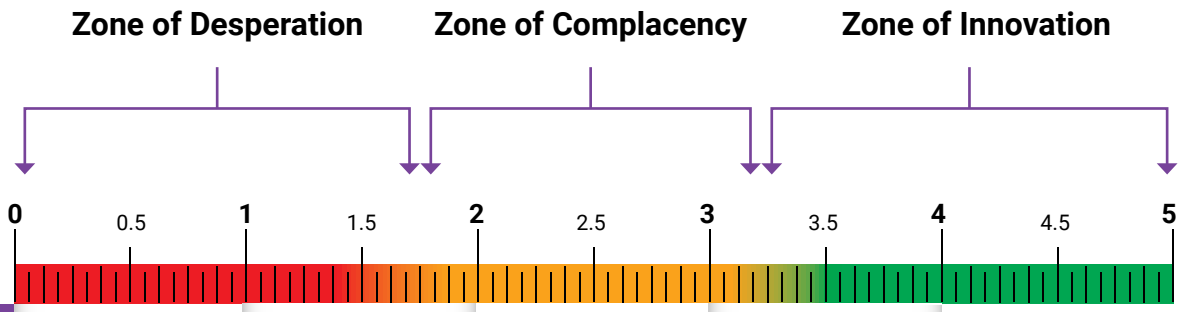
There are a few businesses that tend to wait for a technology wave to mature and be adopted by a large section of the industry. But by the time they implement the best practices, processes and platforms a technology wave has to offer, newer trend tend to emerge with a few early adopters already onboard. This approach is followed by the majority of the industry.

There are a select few leaders in every industry who believe adopting innovative new technologies should be a means to an end. Dominant players in the market not only focus on taking advantage of new disruptive technologies, but also tailor them and ensure that they deliver value to their business and customers. Being the first to create a new technology wave or being one of the early adopters, these leaders don't have the fear of failure. They pride themselves in being trailblazers and defining the next emerging technology, process or platform.

Businesses must adopt the right technologies to improve their organizational processes and achieve maximum profit

We have categorized companies into three zones – "Zone of Desperation", "Zone of Complacency" and "Zone of innovation". An organization's maturity is determined by the following parameters:





Application Architecture	Legacy Technology	State of the art Technology but Lack of proper Tiers and segregation	State of the art Technology, N-tier, Portable, Virtualized but no proper API strategy, High Cost	Clear API Services + Containerized+ Cost optimized	Microservices with Best Practices Adoption & Platform Based Approach
Cloud Adoption	Data Center	Cloud-ready	Cloud-optimized	Cloud-First	Cloud-Matured with highly Cost & Security Optimized
Agile/DevOps	Waterfall	Iterative	Agile + Minimum DevOps	Matured DevOps + Matured Test Automation	End-End DevSecOps + Test Automation
TCO and Operation cost	High License Cost and High Deployment Cost	Low License Cost and High Deployment Cost	Low License Cost and Low Deployment Cost	Adoption of PaaS Services	Continuous Improvement
SaaS Maturity	On-Premise Deployment	Multiple Code bases for customer	Single Code base for all customers but Single Tenant	Multi Tenant with Isolated Database	Multi Tenant Shared Everything
UI Modernization	Client/Server	JSP/ASP.Net	PWA/SPA	MicroFront End	MFE with Right Aggregator and MFE Framework

Zone of Innovation

While the market leaders belonging to different industries might have different business goals, they all have a few common characteristics. They Companies in the Zone of Innovation invest continuously in cutting edge technology, have good organizational processes, and spend their resources on research and development. They make incremental advancements to their architecture. Their products and solutions are built as loosely coupled microservices that run independently and can be untangled and upgraded quickly and cost efficiently. For example, a customer-facing mobile application to book a movie ticket will have a single service for the "Book Tickets" button. If the ticket booking company wants to upgrade the booking experience, they will not have to go through a tedious untangling process that they would have to go through in case of a monolith. With different logical functions for different services, maintenance and improvements become easy.

When companies are organized towards business models that are offered as cloud based SaaS, they tend to have positive returns on their investments. This is due to improved capabilities, ability to deploy services faster and better scalability. Sharing resources and separation of concerns in an optimal way ensures security and lowers cost. Since deployment is automated, data and applications are located and migrated according to business requirements automatically and transparently. These companies have the potential to improve their capabilities based on gathered metrics.

With end-to-end DevSecOps and Test Automation, these organizations are able to release new products at lightning speed. When Agile accompanies DevOps

in the presence of Test automation, organizations improve their release cycles and reduce time-to-market by a large margin.

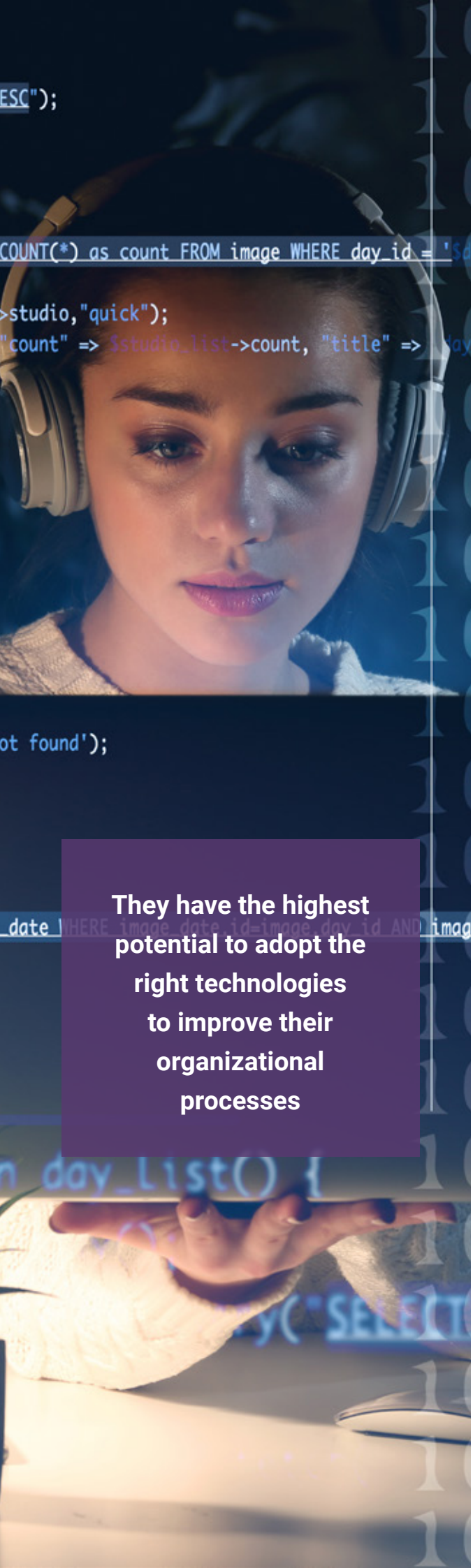
Continuous improvement approach adopted by the companies in this zone helps them to identify savings opportunities. Processes such as Kanban and Kaizen are some of Agile methodologies that provide guideline for them to streamline workflows and reduce operational costs and increase the return on their investments.

Extending the concept of microservices to the front-end world, innovators have found a way to reduce maintenance issues in the frontend layer. This idea allows each team to have a distinct business objective and develop features end-to-end from database to UI.

With high degree of automation, these organizations are able to They release products whenever they want, leverage technology to achieve their goals and have more focus on their business and be innovators through R&D.

Zone of Desperation

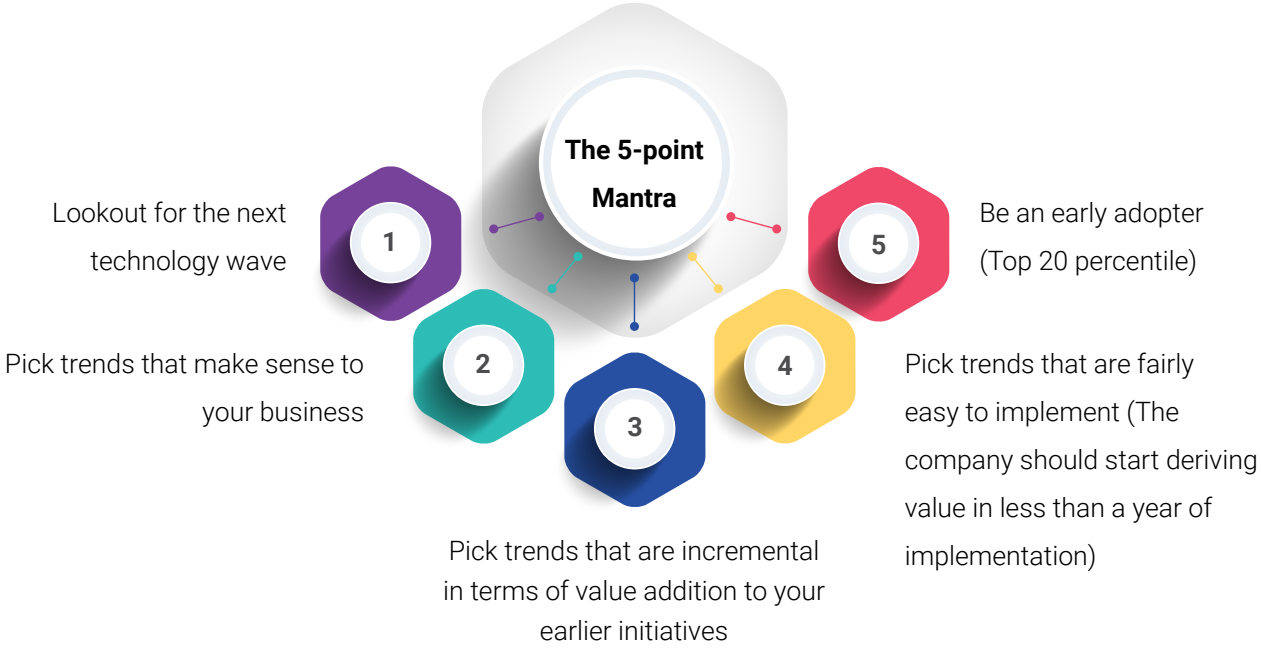
On the other end of the spectrum lies the Companies stuck in the Zone of Desperation usually own legacy systems and on-premise applications. They struggle to even provide the bare minimum of quality services to their customers. They develop their software using traditional SDLC methodologies like waterfall and consequently have the capability to do one or two product releases a year. They spend a lot of money on licensed components while they can be subscribing to their cloud alternatives. Deployment of products is also a costly affair for them since they do not have a streamlined release cycle. As a matter of fact, their release cycles are linear which causes them to test the whole software manually. Resorting to on-premise deployment also contributes to low velocity. Their UI/UX is not up to the mark and customers are usually repulsed by the error-prone and complex interfaces. As a result, these organizations have difficulties expanding their businesses and spend a lot of money on operations and maintenance. In the end, they end up losing their competitive edge and market share to newer incumbents.



Zone of Complacency

There are some organizations that adopt technology and process trends selectively and do so only after they are proven to be successful and well established by others in the industry. Complacent companies don't aspire to be market leaders but prefer to do just enough to stay competitive. While they have applications with multi-tier architecture and are cloud optimized, they lack a proper API strategy and portability. They claim to use Agile methodology to develop software, but they lack the proper DevOps strategy to improve their release cycles. They definitely fare better than their counterparts in the zone of desperation, but have to go a significant way in many of parameters governing the maturity index. As late entrants adopting a technology trend, they tend to be a step or two behind the "zone of innovation". These organizations fall into the zone of complacency because they are comfortable with their current position in the market and are unprepared for the next technology wave. This may be due to lack of appropriate resources or other reasons. This doesn't mean that they are doomed in the long run. In order to fully realize their potential, Organizations must step out of this zone, analyze their issues and constantly strive to improve their maturity levels.

Overcoming the Barriers to Innovation:



Looking at the way technologies disrupt the markets, companies must be prepared to face them. Companies that want to step into the zone of innovation must analyze their business goals in relation to the current market conditions and the problems their future might hold. When organizations establish due diligence as a continuous process, they will be able to identify the right technologies for them to achieve and broaden their business goals. At the end of the day, investment in new technology must increase the business value to the current establishment. They must look to their weaknesses and aim to improve them. For example, if an agile organization in modernization maturity level 3 with minimum DevOps is struggling with productivity issues due to manual testing, implementing Test Automation would be a good choice. Test automation greatly reduces testing efforts and the organization can redirect the resources to other productive work. On the other hand, technologies like Blockchain might not be relevant to all industries and organizations need not adopt them right away. They must decide whether the trend is compatible to their business goals and prioritize accordingly.

Organizations should choose technologies that are fairly easy to implement. Technologies that require scraping up of old technologies and processes will prove expensive and non-compatible. If a technology adopted does not show tangible results within a year, it is not fully mature. This is the reason companies withhold investments in new popular technologies. They wait till the trend matures or at least 10-15% of the industry adopts it. However, large companies that have huge amount of resources usually are early adopters because either they are the adopters or innovators themselves. It is therefore essential for organizations to conduct a thorough analysis of the value modernization will bring to their businesses. They can then pick from a plethora of technologies and approaches to improve their organizational processes. However, every organization must be at the forefront of the technology waves and be an early adopter in order to be successful.

Aspire's Capabilities

Aspire has helped several product companies to assess their situations and choose the right technologies for their modernization journey. We have built more than **60 cloud-native applications** from scratch and have done more than **9500 software releases** till date. Other achievements include **60+ SaaS products** built from scratch and **50+ products based on microservices architecture**. Our clients belong to all three zones –desperation, complacency, and innovation. Our aim is to upgrade the modernization maturity levels of organizations and make them resilient to the challenging market conditions. We have realized that moving from the zone of desperation to the zone of complacency is in itself progress and have guided several complacent companies to find their niche in their markets. Aspire's Software Infinity employs state-of-the-art technologies, core software principles and other enablers to build futureproof software for organizations across all three zones. Our homegrown modernization frameworks such as Techcello and AFTA empower organizations to develop and release software whenever they want. Aspire also helps companies to build applications with innovative approaches such as cloud-native development that infuses the ideas of microservices, cloud technology, containers and continuous improvements that are highly responsive to market conditions.

60+	9500+	60+	50+
Cloud-Native Applications	Software Releases	SaaS Products	Products based on Microservices Architecture

Conclusion

Organizations must be able to make the most out of the current market conditions and prepare themselves for the future. Disruptive technologies have the potential to make or break organizations and they must be careful while adopting the right technology. Assessing your situation in relation to the current conditions and choosing the technology that suits your organization is the best course of action. Therefore, Organizations must not miss the technology waves that have the potential to improve their business value immensely.

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Aju is the Head of Development Business Unit at Aspire Systems having more than 20 years of industry experience in Software Engineering across different technologies and involved in end-to-end product development for Software & Hi-Tech companies. He oversees the delivery of 1000+ global team members across Development, SaaS/Cloud, Usability Engineering, Business Analysis, Enterprise Integration and Web Content Management.

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Sriram is a Senior Content Writer in Aspire Systems with an experience of 3 years. He writes extensively for the Software Engineering team and has numerous research-driven content such blogs, articles, and landing pages in his repertoire. His writing touches mostly upon new technologies and trends that are shaping up the software industry and the world.

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Aspire Systems is a global technology services firm serving as a trusted technology partner for our customers. We work with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in our specific areas of expertise. Our core philosophy of "Attention. Always." communicates our belief in lavishing care and attention on our customer and employees.

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