Building the Next Generation Enterprise with

Client, Cloud and IoT

To discover how GAVS can help you innovate and bring greater value to your business, write to inquiry@gavstech.com or visit www.gavstech.com.

The convergence of cloud and mobile computing will continue to promote the growth of centrally coordinated applications that can be delivered to any device

Top technology trends highlighted by Gartner at the Gartner Symposium/ITxpo 2014

Abstract

The digital economy is pushing companies to adopt new and innovative ways to engage and build relationships with their employees, consumers and partners. The IT function is becoming a business driver and not just enabler. Data is being heralded as a competitive differentiator. For organizations making most of these trends will mean using an integrated approach that brings together client, cloud and the Internet of Things (IoT).

In this whitepaper we take a look at how organizations can leverage these three interdependent digital dimensions to create a more successful future. This could be through empowering business users, through anytime, anywhere and any device access to information for greater productivity and agility across the enterprise. It will mean adopting a hybrid delivery model that comprises certain workloads on the cloud and some that continue to be in data centres. Organization will also need to leverage the increasing connectivity of devices, machines, and business assets to generate insights that increase efficiencies and drive business growth. In partnership with Microsoft's extensive suite of products and platforms, GAVS enables organizations to leverage client, cloud and IoT to push forward into the digital future.

The three pillars of a successful digital enterprise

At GAVS we believe that laying the foundations for a successful digital enterprises starts with three key pillars:

- Any time, any where, any device access to information for business users
- Enabling IT with secure, scalable, on-demand infrastructure and supporting platform
- Leveraging business insights from data in any format and size

Client:

> Any device above and beyond desktops that requires human intervention – drives people centric IT and enables modern business apps

Cloud:

> Any service available from a public, private, hybrid cloud - enables transformation of the data center with on-demand scale and performance. It also shifts focus from maintenance to innovation.

Internet of Things:

> All other devices that are connected and operate without human-intervention - enables businesses to gain competitive edge by connecting data from machines and data from people with the cloud and business intelligence tools.

GAVS and Microsoft: Joining hands to strengthen the future

GAVS aligns its service offerings with Microsoft's comprehensive products, platform, framework and solutions to help organizations make the most of the next-gen technologies. As a trusted Microsoft partner, our services and solutions reflect Microsoft's vision which include:

- Universal clients utilizing the Windows10 ecosystem

- Enterprise mobility using Mobile Back End As Service Offerings powered by the Microsoft Azure platform
- Next generation infrastructure in the form of Software Defined Data Center and the private cloud powered by Windows Server Platformand Azure Pack. Web scale IT Infrastructure through Azure's public cloud platform
- Smart enterprises powered by IoTthrough Azure Event Hubs, Stream Analytics, HD Insights, and Machine Learning services

The diagram below shows how each of the three pillars of GAVS' vision for a digital enterprise are realized through close partnership and alignment with Microsoft's vision.
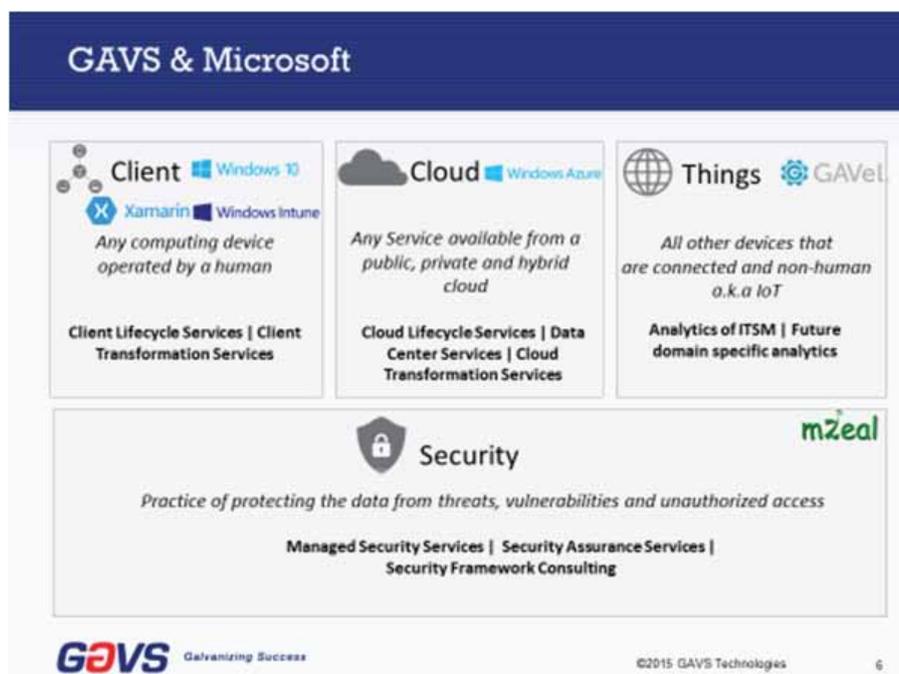
Moving towards people-centric IT

The consumerization of IT and the Bring your Own Device (BYOD) model is driving the need for anytime, anywhere and any device access of information to enterprise users. A highly diverse device ecosystem, demand for instant connectivity and highly rich and seamless user experience necessitates the appropriate enterprise client strategy. We believe this will be shaped by the following trends and challenges in enterprise mobility:

- Through 2018, the growing variety of devices, computing styles, user contexts and interaction paradigms will make "everything everywhere" strategies more difficult to achieve.

- Focus on creating expanded user interface models including richer voice and video that can connect people in new and different ways.

- User Experience (UX) is critical to the success of mobility initiatives

- The importance of desktops cannot be discounted. There is unlikely to be any unified platform for desktops and mobile devices.

- Mobile devices are not likely to converge. Devices will need to be distinguished basis their usability features.

- Enterprise class codes will continue to be relevant in the future and must be easy to extend and maintain.

Microsoft and GAVS: Paving the way for a future-ready enterprise client landscape

Considering the above needs and challenges, we believe that Microsoft's strategy of enabling future enterprise clients will be a step in the right direction.

Windows 10 for instance is a forthcoming operating system from Microsoft for servers, desktop PCs, laptops, tablets, phones, and other connected-devices (i.e. Internet of Things).

Microsoft has also introduced the universal apps model, enabling developers to reuse the bulk of their code when porting an app between phones, tablets, PCs, and the Xbox One. Microsoft provides a full range of support for developing universal apps using the modern objected oriented high level language in the form of C#. This means that the code can be developed using the proven Object Oriented methodologies while the resulting application is fully maintainable. The above concept of universal apps will help enterprises to have a single code base in C# across desktops, windows phones and other windows devices.

For non-Microsoft mobile platforms such as the Apple iOS and Android, Xamarin proves to be a good solution. With Xamarin, you write your apps entirely in C#, sharing the same code on iOS, Android, Windows, Mac and more. Xamarin apps are built with standard, native user interface controls. Apps not only look the way the end user expects, they behave that way too.

Armed with the power and reach of Windows10, Azure's ecosystem, and the

Xamarin's cross-platform enablement, GAVs is uniquely positioned to deliver client services through the following:

Mvvm pattern enabler (xamarin)

This is a cost-effective cross-platform development providing the flexibility to handle app use cases and user experience requirement and native UI. It also offers access to device features and native performance coupled with the time-to-market advantages of code sharing and reuse.

By adopting Windows 10, Universal Apps and Xamarin, an enterprise can follow a unified client strategy based on objected-oriented, strong typed programming language C# while writing applications across devices in a single code base. This approach considers long-term maintenance needs and is therefore more realistic than adopting the weekly typed language or other interpreted scripting frameworks.

Mbaas pattern enabler (winows azure mobile services)

This is a turnkey method to add data storage to user authentication, push notifications, social media integration, geo-spatial queries, offline sync, analytics, and more. When enterprises can forget about the infrastructure and glue code, they can focus on delivering a more differentiated user experience.

Transforming the data center to support innovation

Making the move to the cloud provides greater value and agility. GAVS believes that most organizations will adopt a hybrid delivery model in the future, where certain workloads are managed on the cloud while some continue to be in data centres. These are brought together through an integrated model.

- Several studies conducted on IT budget allocations, point to the fact that 75 percent of an organization's IT budget is on maintenance. Only 25 percent is spent on new business capabilities and innovation

- Enterprises can benefit by adopting the LEAN principles that are enabled by Cloud-based application management (CAMS). These include elimination of all activities that do not add value to a product or service and adopting 'Pull' processes which ensure on-demand service provisioning

- Platform as a Service (PaaS) is here to stay with enterprises adopting it to accelerate innovation, unlock more value from IT spending and mitigate risks related to future upgrade costs

- More and more organizations are adopting a cloud first strategy whereby they develop new business applications directly on the cloud.

Universal device management:

This is an all-encompassing service that targets every aspect of mobile enablement and includes traditional laptops as part of the Windows10 universal apps strategy. Microsoft Intune provides a comprehensive solution for managing across a variety of devices, including PCs and laptops. Through integration with System Center 2012 Configuration Manager, you can further enhance your ability to manage PCs, Macs, and Unix/Linux servers, as well as mobile devices, all from a single management console.

Microsoft and GAVS: Unlocking business value through the hybrid cloud model

One of the important goals moving to the cloud is to allow the business to focus on strategic business priorities rather than on the maintenance of supporting software and hardware. By adopting Platform as a Service on Cloud Platforms, PaaS platforms like Windows Azure, organizations can mitigate challenges around large-scale upgrade efforts. As a true cloud platform for enterprises Azure has multiple choices, design patterns and services as part of its offerings.

Windows Azure Pack for Windows Server is a collection of Windows Azure technologies, available to Microsoft customers at no additional cost for installation into your data center. It runs on top of Windows Server 2012 R2 and System Center 2012 R2 and, through the use of the Windows Azure technologies, enables you to offer a rich, self-service, multi-tenant cloud, consistent with the public Windows Azure experience.

GAVS Cloud Assessment Services and Migration Services ensure that applications are migrated to the cloud according to industry best practices without any disruption or loss of data. This service also ensures greater connectivity and security and better integration. GAVS Cloud Management Services utilizes Azure tools and best practices coupled with the ITIL based principles to ensure that business services are managed within the defined SLAs. These include:

Azure automation

Microsoft Azure Automation provides a way for developers to automate the manual, long-running, error-prone, and frequently repeated tasks that are commonly performed in a cloud environment. You can create, monitor, manage, and deploy resources in your Azure environment using runbooks, which under the hood are Windows PowerShell workflows.

Operational insights

Azure Operational Insights, is an analysis service that enables IT administrators to gain deep insight into their environments. Operational Insights enables users to interact with real-time and historical computer data to rapidly develop custom insights, and provides Microsoft and community-developed patterns for analysing data.

GAVS' strategy and consulting services will help organizations to deliver the most innovative applications to support their business directly by utilizing best of Azure Platform features such as machine learning, Enterprise Search, Hybrid Connections, Stream analytics and more. The utilization and fitment of these services are mentioned below.

Azure search: Azure Search Service is a fully managed, cloud-based service that allows developers to build rich search applications using REST APIs.

Azure machine learning: Azure Machine Learning make it possible for people without deep data science backgrounds to start mining data for predictions.

Azure stream analytics: Azure Stream Analytics is a fully managed service providing low latency, highly available, scalable complex event processing over streaming data in the cloud.

Azure event hubs: Event Hubs is a highly scalable publish-subscribe ingestor that can intake millions of events per second so that you can process and analyze the massive amounts of data produced by your connected devices and applications

Azure service bus: Azure Service Bus is a generic, cloud-based messaging system for connecting just about anything—applications, services, and devices—wherever they are. Connect apps running on Azure, on-premises—or both.

Connecting data with the cloud and business intelligence tools

In the coming years, IoT will transform societies and businesses lives by providing a connected ecosystem of machines. In terms of generating value from business intelligence IoT shows immense potential whether it is data generate from humans or sensors embedded in objects around us. With the help of IoT businesses can generate data and then send this data into the cloud for extracting real-time business intelligence.

While IoT brings in new innovation, it also comes with inherent risks. These risks are much different from earlier innovations, because when in earlier cases it is mostly the enterprise financial, reporting and other data processing tasks were at risk but now with IoT directly human and community life are at risk and hence this has to be looked with much more attention.

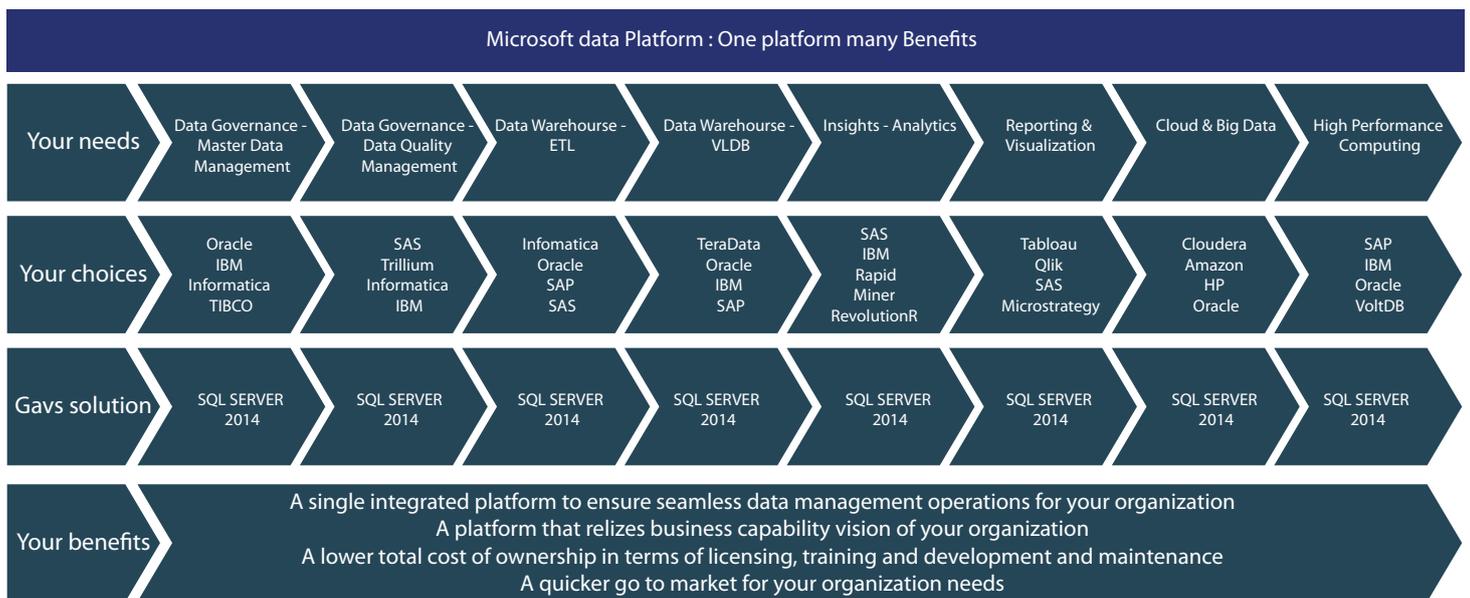# GAVS and Microsoft: Building a robust data platform

Enabling insights from data of any format, size and from any source requires a robust data platform to support it. In this context, the following principles can guide the choice of data platform.

- Use the power of Big Data analysis in combination with traditional relational databases
- Extend Big Data with a semantic layer for enrichment and to get context out of content
- Provide seamless access to all forms of data - traditional structured data, Big Data and content enriched with semantic layer
- Include data quality, master data management and governance as part of the framework

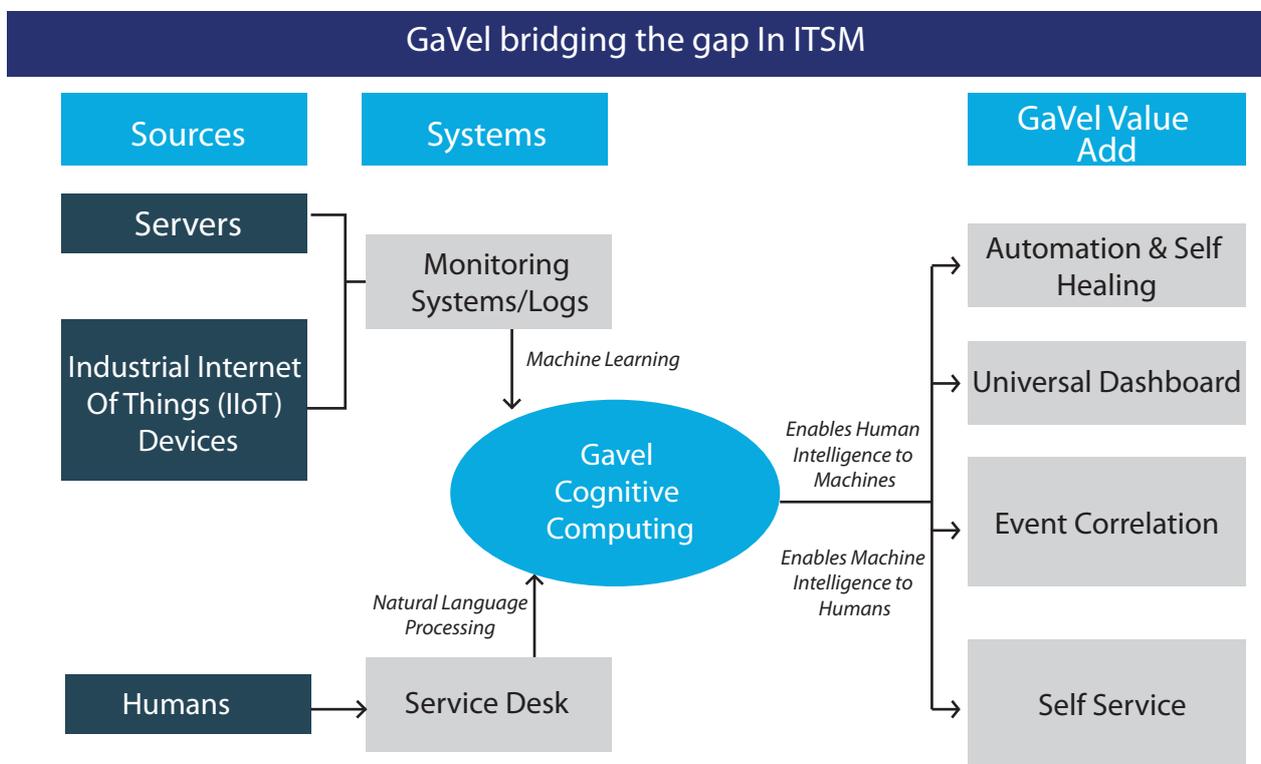## Microsoft's IoT related offerings:

- Azure Event Hubs
- Azure Stream Analytics
- Azure Machine Learning
- Azure Intelligence System
- Various services under Azure Data Platform
- Microsoft Data Portfolio

The Microsoft Data Platform governed by SQL SERVER 2014 suite helps enterprises in realizing this goal. It is the only industry solution that provides integrated end-to-end data platform for the next generation enterprise as depicted below.

Microsoft data Platform : One platform many Benefits							
Your needs	Data Governance - Master Data Management	Data Governance - Data Quality Management	Data Warehourse - ETL	Data Warehourse - VLDB	Insights - Analytics	Reporting & Visualization	Cloud & Big Data	High Performance Computing
Your choices	Oracle IBM Informatica TIBCO	SAS Trillium Informatica IBM	Infomatica Oracle SAP SAS	TeraData Oracle IBM SAP	SAS IBM Rapid Miner RevolutionR	Tabloau Qlik SAS Microstrategy	Cloudera Amazon HP Oracle	SAP IBM Oracle VoltDB
Gavs solution	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014	SQL SERVER 2014
Your benefits	A single integrated platform to ensure seamless data management operations for your organization A platform that relizes business capability vision of your organization A lower total cost of ownership in terms of licensing, training and development and maintenance A quicker go to market for your organization needs							

In addition to Data Services that are in alignment with the Microsoft Data Platform, GAVS offers products which work on machine generated data and provide insights for the enterprises. Both these products can be ported to the Microsoft Platform to strengthen the services available under the Microsoft Azure ecosystem.

GAVEL: This a platform for machine-to-machine and human-to-machine intelligence for IT Service Management (ITSM), with the ability to perform event acquisition, aggregation, intelligence and visualization. GaVeL enables cognitive computing in ITSM by (a) allowing humans and machines to work along side each other (b) Helping machine better understand humans and their environment (c) By identifying opportunities for machines to replace humans with respect to mundane and repetitive tasks

GaVel bridging the gap In ITSM

Sources — Servers, Industrial Internet Of Things (IIoT) Devices

Systems — Monitoring Systems/Logs (Machine Learning), Service Desk (Natural Language Processing)

Gavel Cognitive Computing — Enables Human Intelligence to Machines — Enables Machine Intelligence to Humans

Humans → Service Desk

GaVel Value Add — Automation & Self Healing, Universal Dashboard, Event Correlation, Self Service

CYGLASS: Advanced persistent threats are multi-stage attacks targeting a specific entity. After entry into the network, threat actors move laterally around the network doing reconnaissance and stealing credentials to gain access to important user, service, admin accounts, and specific systems. This product prevents security threats against enterprises by adopting real time Big Data analytics and event correlation techniques on logs of machine data.

CyGLASS is designed to do what the best security analysts do, namely to learn the patterns of usual behavior for the users and devices in this particular network, and then to monitor the activities in the network, from many perspectives, to spot the footprints of attackers before they are able to complete their campaign.

Conclusion

Organizations need to align their business model to the latest digital technologies in order to stay ahead of curve. While doing so there are several solutions that can help them address the challenges in embracing new changes due to the lack of unified platform options.

Cloud OS from Microsoft's helps build the unified platform for modern businesses. It is a platform that addresses and unifies all the needs that customers have across on-premises and cloud (customer clouds, service provider clouds and Microsoft's cloud). As a trusted Microsoft partner, GAVs is uniquely positionedto support organizations in their client, cloud and IoT strategy as they transform themselves into the next generation enterprise.