Microsoft

Microsoft *Single View Platform*

A Data Visualization Platform for the Enterprise

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www.microsoft.com/industry/government/solutions/Single_View_Platform

Executive Summary

Microsoft® *Single View Platform* (Microsoft *SVP*) provides a "single view" of information and data, enabling users to turn situational awareness into action. This **data visualization platform** can be agency-defined or program-defined, depending on government mission requirements and the kind of information users or an agency need to execute a mission. With Microsoft *SVP,* government agencies can increase stakeholders' situational awareness through improved coordination and accuracy of timely information to meet agency mission requirements.

Microsoft *SVP* is an open, industry standards–based architecture that can be built on existing desktop and server infrastructures. It is flexible, secure, and redundant, and it can operate both in high-bandwidth and low-bandwidth situations. Interoperable by design, it can integrate multiple data sets, legacy systems, and other existing applications such as Situational Awareness, Common Operation Picture, and other "dashboard" initiatives. This will reduce cost, complexity, and development time while minimizing impact on ongoing initiatives. Because the platform architecture is flexible and yet secure, government agencies can successfully create restricted access and controls. Hence, end users have access only to information that is relevant to their role. In addition, Microsoft *SVP* provides a consistent "single view" of complex data sets across multiple roles and user interfaces, regardless of the device used to interact with the application.

Microsoft *SVP* is also a baseline architecture that serves as a technology foundation for an agency or program, allowing that agency or program to configure its remaining application architecture based on its specific requirements. Its commercial off-the-shelf technology and ease-of-use result in a quicker turnaround timeline to build and deploy.

Government agencies and programs can utilize Microsoft *SVP* to meet current and evolving data visualization and other decision support system requirements. Solution scenarios include but are not limited to the following:

- Emergency and disaster response, crisis management, and event management scenarios
- Information sharing with coalition partners and nations
- Routine and tactical operations for port management and for law enforcement entities
- Government communication to citizens on tax assessment and reporting, land management, and food safety
- Command centers, operations, and IT data centers
- An executive dashboard for tracking personnel, assets, and reports as well as mission and program requirements

Microsoft proposes Microsoft *SVP* as a standard solution platform that may address the needs of a broad range of users for access to key information within a geographic context. Microsoft has experience and a proven record in the technological underpinning that supports government requirements for data visualization capabilities. Through our strong and cohesive "best in industry" technologies and capabilities at a best value and lower risk, we believe Microsoft *SVP* provides the vision and architecture to help government agencies meet operational and mission requirements.

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Supporting Mission Requirements Through Improved Situational Awareness

Government agencies, for instance those involved in homeland and national security, face a challenge to detect and identify credible threats to our nation's security while also facilitating the constant flow of legitimate travel and commerce. The complexity is increased by having multiple stakeholders involved in this mission who have disparate data sets and existing systems. Civilian agencies face the same challenge in numerous and different ways by integrating various legacy and isolated data sets and systems to meet their mission and program requirements to service citizens.

A number of U.S. Government agencies have stood up or plan to announce a series of initiatives centered on a data visualization tool for designated users. These initiatives are often referred to as Common Operating Picture, Situational Awareness, or other dashboards. Having a "single view" with accurate and timely information that is shared among authorized users and agencies better helps government agencies meet mission objectives.

These data visualization initiatives can take on different meanings depending on the role of the official or agency and the type of information needed to turn information into action. Scenarios include but are not limited to:

- **National emergency response** to a natural disaster or terrorist attack where multiple stakeholders must have access to the same single view to make better-informed, effective, and timely decisions.
- **Routine and tactical operations** for port management at national port of entries, or at the field level to track personnel, aircraft, cutters, etc. on routine agency missions and the ability to share that information with other units in and around that area of responsibility.
- **Information sharing with partner agencies and nations,** where through a secured Web browser, information can be shared with coalition forces and other partner agencies to meet defense mission and objectives.
- **Citizen portals** that provide citizens transparent interaction with data that government agencies manage, maintain, and secure. Examples include workforce and crime management and reporting; tax assessment and zoning; and permitting, inspections, and other reporting.
- **Command centers, operations, and other data centers** where domain awareness is achieved by these centers serving as a fusion house for multiple data feeds and systems. Feeds can be tactical (daily feeds and reports) or strategic (intelligence reporting, alerts, and in-depth analysis) for operations. They can even provide an IT command and control center for the health status of data networks and systems.
- **Executive/management dashboard** for program managers and senior officials to provide a high-level status report on personnel and assets at any given time at any location, along with an executive roll-up of routine reporting from lower field units to headquarters. It can also provide senior government officials a roll-up of several dashboards and give the end user the capability to drill down into information from specific tactical units or programs.

One of the key challenges encountered in achieving shared situational awareness is that multiple officials need to have access to the same information (regardless of geographic location), rendered in the same manner, to make timely and informed decisions. For example, the solution must be architected in a manner to provide, in the case of a natural

disaster, the FEMA Administrator in Washington, D.C., the governor of a state, and other key stakeholders (e.g., senior first responders on the scene) the same single view and information. Other challenges include but are not limited to:

- Access to multiple sources of information from disparate data sets, sources, and legacy systems.
- Integration of these multiple data sets and sources (regardless of hardware or software vendors).
- Reduction of cluttered information and noise to drill down to relevant and important information.
- Restricted access controls, including who should have access to what information and how will it be protected.
- Access to real-time or near real-time information and the ability to pull and push historical data.
- Limited connectivity, including low-bandwidth considerations, particularly in field operations.
- Ability to share inside and outside the government agency (e.g., other federal government agencies, state and local governments).

The Microsoft® *Single View Platform* (Microsoft *SVP*) will provide cross-domain awareness of threats, activities, programs, and the status of resources (personnel and assets), independent of agency type and location. Providing operational and strategic decision authorities with a "single view" facilitates more timely and effective coordination and response among all stakeholders.

Microsoft Strengths

Microsoft understands the important mission of national security and public safety. We believe we can play an important role in addressing the technology challenges facing government agencies in deploying Situational Awareness, Common Operating Picture, data visualization dashboards, and other decision support system initiatives through Microsoft *SVP*. Microsoft strengths include:

- **Extensive Research and Development (R&D)** efforts that allow Microsoft to incorporate emerging capabilities into our enterprise solutions on an ongoing basis. Our U.S.$7 billion annual R&D budget enables the transfer of research technology into market-leading products, including the Windows Vista® operating system, the 2007 Microsoft Office system, Bing™ Maps for Enterprise (formerly Microsoft Virtual Earth™ mapping software), and Microsoft Office SharePoint® Server 2007.
- **Commercial Off-the-Shelf Solutions** for complex enterprise requirements that are agile, reliable, supportable, scalable, secure, and affordable. This results in a lower total cost of ownership, higher return on investment, and shorter implementation cycles.
- **Government Investments** in Microsoft technologies through Enterprise Licensing Agreements. Capitalizing on existing investments in Microsoft technologies can help achieve a high degree of success while minimizing costs.
- **Ubiquitous Presence** across national, state, and local government agencies through Enterprise Licensing Agreements and existing deployments.
- **Government Solutions,** based on Microsoft technology, are being deployed at the federal, state, and local levels.

- **A Robust Platform** that provides a complete set of products and tools for creating enterprise-scale distributed applications and that delivers information sharing and interoperability capabilities through XML and Web services tools.
- **A Partner-Centered Model** that is pivotal to successfully supporting our government customers. Microsoft has the largest partner ecosystem anywhere (more than 700,000 worldwide), and our partners provide 96 percent of our solutions.
- **Trustworthy Computing Security Commitments** that help ensure that Microsoft products are available when customers need them, that the integrity of customer information is secure and that customer privacy is assured and safeguarded.
- **Interoperability by Design Commitment,** which offers a comprehensive portfolio of interoperability software capabilities, from the operating system to individual applications. Our software works with a vast array of technologies in the marketplace, whether they shipped last week or a decade ago.

Microsoft *SVP* Vision and Architecture

Business Capabilities

Microsoft *SVP* provides the vision and architecture framework to better equip government agencies to meet this overall mission requirement. The Microsoft *SVP* architecture addresses each of the above outlined challenges. It is based on open standards and Web-based architecture. It is flexible, highly secure, and redundant, and it can interoperate with various legacy systems and devices.

Interoperable by design, the architecture does not replace existing agency Common Operating Picture, Situational Awareness, and other management dashboard capabilities. Instead, it builds on them to enable better interoperability with various legacy systems, existing and emerging capabilities, and other existing infrastructure. Microsoft *SVP* is based on commercial, off-the-shelf technologies, and its integration provides a lower total cost of ownership and decreased development time. In essence, Microsoft *SVP* provides an architecture foundation for better information sharing and interoperability while minimizing the impact on current initiatives.

The Microsoft *SVP* platform provides the respective agency or program a baseline architecture foundation with the ability to configure the remaining solution based on the specific mission requirements of that agency or program. Microsoft recognizes that government agencies will have similar but different requirements. Hence, the Microsoft *SVP* platform has a layered architecture so that an agency can include different applications and feeds for additional requirements and processes. Examples include but are not limited to:

- Presence awareness of authorized users who need to know and share information (inside and outside the government agency).
- Rights management to control who can have access to what specific information.
- Enterprise content management and business processes (workflow, document management, records management).
- Online and offline connectivity and collaboration for internal and external users.

- Integration of analysis from threat information and intelligence reporting (past, current, and predictive analysis).
- Strategic planning and performance management life cycle for government programs and initiatives.
- Enterprise Project Portfolio Management capabilities for program performance tracking, trend analysis, and reporting, including integrated issue, risk, and schedule management across all critical program areas.
- Access feeds from sensors, radars, camera, video, unmanned aerial vehicles (UAV), and towers.
- Access feeds from weather, traffic, media, and other environmental factors.
- Various communications integration (ability to push and pull information regardless of device, such as computer, mobile phone, fax, e-mail, text message, alerts, and RSS feeds).
- Status and health state of critical infrastructure, personnel, and assets.

Microsoft proposes Microsoft *SVP* as a standard platform that can address the needs of a broad range of users for access to key information within a geographic context. Across government agencies, daily operations typically involve a geographic setting. Examples include managing crowded streets and people for a major sports event or parade, a sprawling seaport stacked with containers, a congested state transportation system with multiple lanes of traffic, or passenger terminals at a busy international airport. Operators within those environments and managers providing oversight from remote headquarters locations have an equal need to view mission-critical information within the geographic context of those environments. Microsoft *SVP* offers an interoperable, architected solution that brings the enterprise's existing information into that geographic, operational context.

Microsoft *SVP* Technology and Architecture

The Microsoft *SVP* foundation architecture is based on the following core technologies:

- Bing Maps for Enterprise
- Microsoft Office SharePoint Server 2007
    - PerformancePoint® Services for Microsoft Office SharePoint Server 2007
- Microsoft SQL Server®
- Windows Server®

Each of these core technologies will be described below in further detail.

Bing Maps for Enterprise for Data Visualization

With Bing Maps for Enterprise (formerly Microsoft Virtual Earth), government agencies can search, discover, visualize, and collaborate using data in the context of location. Users can extract any point-of-interest data required by the mission and incorporate their own data sets in a security-enhanced environment. They are free to keep data in its native format (including any other data sources that they prefer to use in the application) and, through formats compliant with the Open Geospatial Consortium open standard, simply "hook" into these data sets and visually display them in Bing Maps.

Bing Maps sets itself apart from competing solutions through the detail and accuracy of its imagery. Compared to the .6-meter commercial satellite imagery of "aerial views" offered by its competition, Bing Maps begins with satellite imagery and then features actual aerial imagery at resolutions of 30 centimeters (cm) or less over urban areas. Much of this data is now being collected by Microsoft partner companies flying in planes at roughly 5,500 feet with the Microsoft UltraCam large-format digital aerial camera. The result is stunning aerial imagery captured at a 15-cm ground sample distance, providing users with highly detailed views. Because Microsoft directly commissions flyers to collect this data, the imagery is kept current within one to two years.

Additionally, three-dimensional city models in Bing Maps for Enterprise are created from this aerial imagery through an automated photogrammetric processing pipeline, so the models inherit this same level of accuracy. In addition to being photorealistic and geo-specific, city models in Bing Maps boast a relative accuracy of less than one meter—as high as 15 cm, building edge to building edge in many places—rendered directly in the browser, without the need for the user to download and install software.

Another benefit of the Bing Maps for Enterprise is its software as a service delivery model. Because it is built on the premise of service-oriented architecture (SOA), Bing Maps supports a variety of applications on any number of devices that can be accessed using an Internet browser. With reliability, accuracy, and fast response times, users can focus on their core mission, freeing them from the requirement of managing and updating geographic information system hardware and software. Using a common set of application programming interfaces (APIs), developers can build applications that pull in rich-map and two-dimensional or three-dimensional imagery details from Bing Maps. The volume of data behind Bing Maps—now in the petabyte (1 quadrillion bytes) range—is stored using Microsoft SQL Server 2005 running on the Windows Server 2003 operating system.

Microsoft recognizes that the Web services feature of Bing Maps for Enterprise may not benefit all government agencies and therefore offers a Virtual Earth Server through its subsidiary Vexcel Corporation. The Virtual Earth Server delivers the same capabilities of the browser-based version of Bing Maps behind a customer's firewall, on private or classified networks, and on portable platforms. The Virtual Earth Server is available in optional form factors to meet customers' data requirements (city, state, region, or the world). Additionally, the Virtual Earth Server makes possible additional custom capabilities, including the integration of custom three-dimensional content, also offered by Vexcel Corporation.

Enterprise Unified Communications and Collaboration

In recent years, the cornerstones of government and business communications—telephony, e-mail, voice mail, and fax—have been complemented by new technologies, such as instant messaging, Web conferencing, and voice over Internet Protocol (VoIP). Unfortunately, these tools remain mostly distinct, rather than integrated or optimized for modern businesses. In fact, they can create complexity for users, application integration challenges for the

organization, and high costs for IT departments tasked with acquiring and managing multiple proprietary infrastructures. In addressing these challenges, Microsoft Unified Communications is:

- **Seamless and intuitive.** Government users have a unified experience that helps them choose the best type of communication and move between different types easily, whether they are ashore, afloat, or in the desert, or working across time zones, firewalls, and organization or agency directories.
- **Process and system-integrated.** With standards support and APIs that are broadly available, developers can build convenient, contextual communications into the applications and systems that agency officials use to secure land and maritime borders.
- **Flexible and trusted.** Based on software and services that take advantage of the Windows® operating system and its ecosystem of hardware and training resources, Microsoft Unified Communications solutions provide government agencies with greater flexibility in creating an efficient, secure communications infrastructure that delivers business value at a lower cost.
- **Extensible Voice.** Unified Communications integrates with existing VoIP solutions or enables a full software-based VoIP solution with parity of more costly solutions.
- **Gov 2.0 Ready.** A built-in, secure bridge for public messaging and the ability to federate information to other agencies to allow constituent interactions in emergencies or time-sensitive collaboration.

In addition, Microsoft Office SharePoint Server is a critical part of the overall collaboration vision at Microsoft and integrates with other collaborative products to offer a comprehensive infrastructure.

Figure 8. Microsoft Office SharePoint Server 2007

This architecture provides the building-block technologies and tools that are designed to work together to help government agencies achieve greater process efficiency, responsiveness, and lower operation costs. The Microsoft Enterprise Collaboration Platform is:

- **Services-based.** Microsoft builds and licenses products as operating systems and applications but exposes collaboration capabilities wherever possible as services that are accessible from any application. The Microsoft Collaboration Framework is compatible with the services-oriented Federal Enterprise Architecture (FEA) and was written for interoperability from the ground up with open standards like Web Services and XML.

- **Integrated.** The service orientation of the Microsoft Enterprise Collaboration Platform supports broad and deep integration into the Microsoft product line, as well as into the product lines of partners and competitors. Collaborative tools and services work within existing enterprise environments and do not require wholesale upgrades or rip-and-replace systems. New functions should deliver significant new value to justify their adoption and extend to pre-existing systems, regardless of the vendor.

In addition, the Microsoft Enterprise Collaboration Platform incorporates:

- **An extensible service-oriented architecture.** The value of a service orientation is that services can be employed and extended, even replaced. This provides a platform for the value-added development of applications and services that build on or extend the base.

- **A pervasive use of core services.** Core services, such as rights management, directory services, and security, are central to every aspect of collaboration. However, they should not intrude on user experience with repeated authentication requirements or by preventing access unnecessarily. Microsoft applications use these services.

- **An extensible, integrated tool kit.** Application developers will integrate collaborative services into their business applications, and they will need the appropriate user tools (various languages, scripts, and visual interfaces) to do the job. Microsoft applications and services offer interfaces that can be accessed from tools in the Microsoft Visual Studio® development system and the extensions that are built on it.

- **Robust security.** The Microsoft Enterprise Collaboration Platform has been engineered to help federal customers meet the stringent security requirements of the Federal Information Security Management Act (FISMA). Microsoft now architects and engineers products with security as a major focus, in line with the Microsoft Trustworthy Computing Initiative (www.microsoft.com/mscorp/twc).

- **Solution Framework.** Microsoft is a leader in collaboration technologies. Whether you need to integrate SAP data into your collaboration, capture Web-based form data and feed it into business process management or other data systems; perform simple or complex collaboration or root-cause business analytics; or deploy a Web 2.0 solution that satisfies all Gov 2.0 needs as defined by the General Services Administration—Microsoft has a solution framework that meets these goals out-of-the-box or with configuration of the server to provide services on-demand.

Microsoft Office SharePoint Server for Business Intelligence and Analysis

One of the key challenges facing government agencies and programs is to harness the value of the data they collect and store. Many government plans, objectives, and publicly stated missions are driven by public demand for improved services and bound by the pursuit of cost-effective management. Microsoft Office PerformancePoint Services, which is part of Microsoft Office SharePoint Server Enterprise, is the next-generation performance-management application from Microsoft that links people at varying levels of an organization—whether they are executives, managers, or individual contributors—to the overall government strategy. With Office PerformancePoint Services:

- Senior officials can drive accountability and alignment across and up and down the organization.

- Information workers can monitor and analyze activities with an integrated and collaborative solution.

- IT managers can drive better adoption and compliance by enabling organizations to better associate business intelligence and corporate performance.

Microsoft Business Intelligence (BI) competency areas through Office PerformancePoint Services include:

- **Monitoring** effectively tracks performance against an organization's goals. Dynamic Scorecards help track and analyze information across an organization to provide insight into the drivers that affect business performance. When integrated with geospatial technologies, business intelligence programs can be monitored and analyzed using a powerful and visually intuitive map-driven interaction.

- **Analytics** employs world-class data exploration techniques to provide decision makers with rapid insight into trends, patterns, opportunities, and challenges in their business environment. The intuitive information navigation and powerful calculation techniques move decision makers from simply monitoring what is happening in the business to understanding why it is happening.

- **Planning, Budgeting, and Forecasting** lead to leaner and more agile business processes that can adapt to quickly changing business conditions. Office PerformancePoint Services consolidates multiple submitted budgets into a rollup that helps shorten the performance-management cycle and makes auditing financial data much easier.

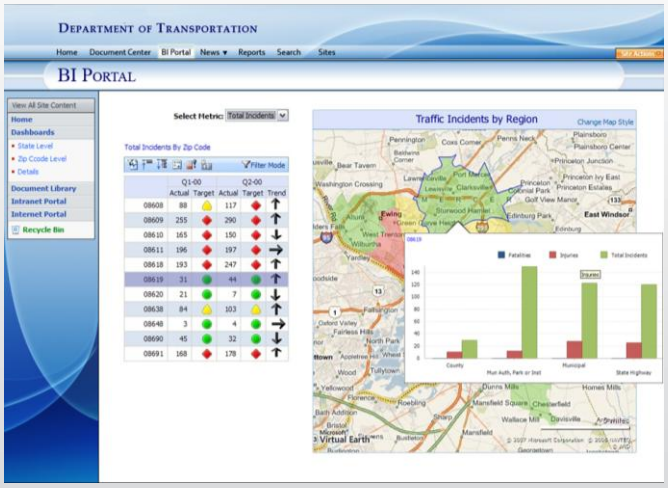

Figure 7. Powerful analytics and data exploration techniques help analyze trends, identify exceptions, and investigate root cause.

The Microsoft BI offering is also powered by Microsoft SQL Server 2008 data management software, which provides the robust, scalable, and enterprise-ready BI platform needed to deliver critical information to workers across an entire organization. End-to-end solutions include data warehousing; extract, transform, and load; reporting services; OLAP services; end-user tools; performance-management applications and delivery; and advanced visualization and spatial technologies.

- **Tailored BI for every role in the organization.** Microsoft BI provides a flexible solution that delivers properly formatted information to people when they need it. Personal, team, and organizational BI deliver agile

and collaborative solutions that align with overall organizational goals and objectives through performance-management applications.

- **Familiar and easy-to-use set of integrated tools.** The "BI for the masses" vision from Microsoft delivers the user experience through applications in the Microsoft Office system—namely Microsoft Office Excel® spreadsheet software and Office SharePoint Server—that individuals across the organization can relate to, without a large investment in time and training. Organizations can easily model and deliver location-based solutions through the interactive geospatial capabilities of Microsoft *SVP*.

- **Improved governance and transparency.** Governments, regulators, and the public look to organizations to be more transparent and accountable. Microsoft performance-management applications help agencies communicate effectively how they achieve business results, how they measure and evaluate risk, and how to optimize on strategy implementation through better analysis and use of organizational resources.

Microsoft SQL Server: The Foundation of Mission-Critical Solutions

SQL Server helps organizations manage data—any place, any time. Organizations can store data from geospatial, structured, semi-structured, and unstructured documents, such as images and rich media, directly within the database. SQL Server also delivers a rich set of BI services so that organizations can to do more with the data they already have, such as query, search, synchronize, report, and analyze.

With the BI services, users can access data from across the enterprise and manage the data no matter where it's stored—from the largest servers within the data center to desktop computers and mobile devices. BI services inside SQL Server are also not constrained to SQL Server data stores. It provides a comprehensive platform that delivers intelligence where users want it. Because it integrates with the Microsoft Office system, information workers can access data directly using the tools they use every day, such as Microsoft Office Excel.

In particular, BI is often viewed as a highly specialized area open only to analysts armed with complex and expensive tools. But, developers can create applications that integrate SQL Server with familiar programs such as the Windows Internet Explorer® Internet browser. With the improved scalability, data transformation, development tools, and data analytics of SQL Server, users at all levels can gain access to the critical BI information they need to make effective and timely decisions.

When focusing on the geospatial capabilities Microsoft SQL Server 2008, it is important to note that it delivers comprehensive spatial support, enabling organizations to seamlessly consume, use, and extend location-based data through spatially-enabled applications, again helping end users make better decisions.

Key elements include:

- **Comprehensive spatial support.** Build spatial capabilities into applications by using the support for spatial data in SQL Server 2008.

- **High-performance spatial data capabilities.** Achieve high-performance spatial capabilities with SQL Server 2008.

- **Geospatial application extensibility.** Extend spatial support by integrating spatial data in SQL Server 2008 with location-enabled applications and services.

Note: SQL Server enables data to be consumed from custom applications developed using the Microsoft .NET Framework and Visual Studio, and from within SOA and business processes through Microsoft BizTalk® Server.

SQL Server is designed to help support high-end databases and to provide industry-leading scalability and reliability. Built-in, end-to-end business intelligence provides developers in the public sector with advantages in three main areas:

- Enterprise data management (all types, geospatial included)
- Comprehensive developer functionality and increased productivity
- Industry-leading BI capability (integration, analysis, and reporting)

Many government agencies have proven the reliability and scalability of Microsoft SQL Server. For example, the United States Department of Agriculture (USDA) uses geographic information system software as a means of acquiring and maintaining detailed data about U.S. land use and topography. In its search for a centralized and more reliable source for its data, the USDA decided to build a geospatial data warehouse, opting to use Microsoft SQL Server as the basis for all of its data storage. The resulting solution features enhanced data performance, Web access to the warehouse, and a system that will scale up to a projected 37 terabytes of total data in the future.

- See more great case studies about Microsoft SQL Server
- See the industry-leading SQL Server benchmarks
- See why the industry recognizes SQL Server as a data security leader
- See the top new features in SQL Server 2008

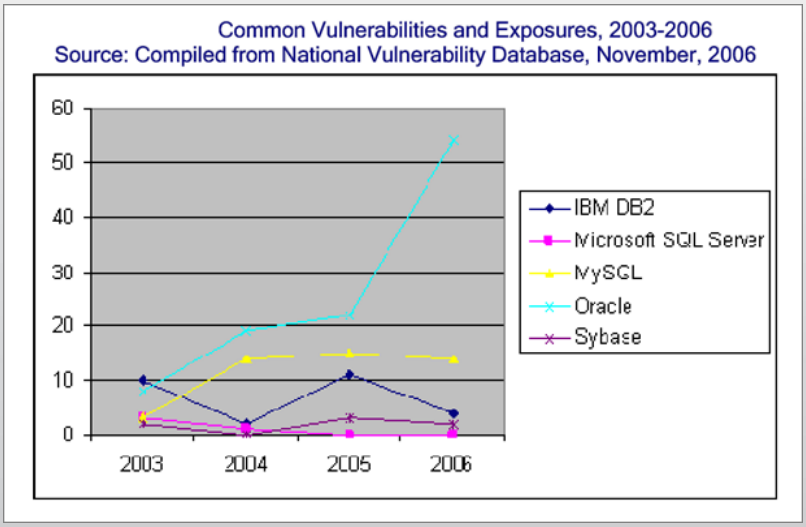

Figure 9. "Microsoft Runs the Security Table," by Eric Ogren, Security Analyst, The Enterprise Strategy Group.
http://download.microsoft.com/download/a/4/7/a47b7b0e-976d-4f49-b15d-f02ade638ebe/ESG_Brief_SQL_Security_Nov2006.pdf

Windows Server

Windows Server provides a robust, security-enhanced, and scalable operating system that meets Common Criteria EAL 4+ requirements and uses a FIPS 140-2–validated cryptographic module. Windows Server also provides role-based access through the Active Directory® service and Authorization Manager.

Active Directory enables role-based security management across the enterprise. Specifically, it allows the implementation of uniform policies for administrators, users, and computers, depending on their respective roles. This enables fine-grained management, the mapping between access control and the structure and tasks performed in a government agency. The Authorization Manager provides a flexible framework for implementing role-based access management into an application or computer. Administrators who manage the applications and machines can provide access through assigned user and computer roles that relate to job or server functions.

In terms of the Microsoft *SVP* architecture, with Windows Server and related technologies, government agencies can provide access to Common Operating Picture and Situational Awareness (COP/SA) initiatives through a roles-based methodology. Based on their specific roles, when users log on they have access to only the part of the Microsoft *SVP* solution that is relevant to their job role. For example, a user, such as a field operator, may have access to only limited parts of the Microsoft *SVP* solution, but a supervisor or program manager may have access to the full Microsoft *SVP* solution. The solution architecture is flexible and security-enhanced so that government agencies can create restricted access and controls.

Interoperability

From e-government to healthcare to education, government organizations are providing a growing variety of online services to their constituents. As these services reach across traditional agency lines, complex computing systems must be interoperable to create workflow efficiencies and exchange and use information. With increasing frequency, governments are seeking solutions based on choice, agility, and return on investment.

Microsoft embraces interoperability—through current solutions using the new generation of XML-based software, through technology and intellectual property licensing, and in partnerships with companies that are dedicated to helping software products work together. There are two major elements to the interoperability strategy at Microsoft. First, Microsoft continues to support governments' needs for technology that works well with what they already have. Microsoft products and solutions are focused on interoperability and have significant functionality dedicated to interoperating with non-Microsoft products. Microsoft contributes to interoperability across the industry through participation in standards bodies and intellectual property licensing. Second, the company is working with the industry to define a new generation of software and Web services based on XML, which enables software to efficiently share information and opens the door to a greater degree of "interoperability by design" across many different kinds of software.

Microsoft recognizes that government agencies have a number of non-Microsoft products in their current infrastructure and systems, including COP software and mapping data. The interoperable architecture on which Microsoft *SVP* is built enables interaction with these products so that government agencies can continue to capitalize on these investments while realizing the benefits of Microsoft *SVP.* The platform is not necessarily a replacement for existing software and data. Rather, it is an efficient approach for bringing these capabilities to operators in a more useful, visual context.

Microsoft is a leader in offering technologies and products that address enterprise collaboration and interoperability. This usage does not mean that mission-critical applications will all be Microsoft products or services. Because of its

commitment to interoperability, most Microsoft products can be used in operating environments that are based on non-Microsoft technologies. Microsoft technologies help support connectivity to various platforms, databases, mainframes, mobile technologies, and sensors. Further, they help support the virtualization of existing technologies so that governments can provide simplicity and productivity to support the mission of internal security and public safety. Microsoft believes that the initiatives set forth by its product development teams and R&D to make software that is interoperable by design is a cornerstone to the success of government agencies for managing business processes and making mission-critical decisions. Because Microsoft products are designed to be part of a larger end-to-end platform, they can help play a valuable role in the overall COP/SA implementation, even when combined with non-Microsoft technologies.

Conclusion

In an era when government agencies are tasked to do more with less, Microsoft has core strength to meet this government challenge by delivering agile, reliable, supportable, scalable, secure, and affordable solutions. Our technologies are used everyday across national, regional, and local government levels. Microsoft's commitment to constant innovation, as reflected in our ongoing research and development investment and important initiatives, such as the Trustworthy Computing Initiative, has helped us achieve the important privilege of having our technology well distributed across government. In 2006, Microsoft earned the title of "World's Most Respected Company" as reported by PricewaterhouseCoopers. The report described Microsoft as "innovative, fulfilling the needs of society with their products and ability to grow." Similarly, in March 2006, a survey of global opinion leaders at the World Economic Forum ranked Microsoft the "World's Most Trusted Company."

Making the right choice among various technologies is essential if government agencies are to meet today's challenges and prepare a solid foundation for the future. Investing in a framework that sets a solid foundation for current and future interoperability and collaboration is critical for the many essential and long-term government initiatives. Through Microsoft *Single View Platform*, we believe we can play an important role in helping government agencies achieve their mission requirements in the area of data visualization.

The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

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