

WHITE PAPER

Intelligent Information in Action

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Computer Associates®

Intelligent Information in Action

Information that is readily available to the right people at the right time, and that enables them to act quickly and decisively, is a crucial requirement of enterprises that intend to grow and remain profitable. The intelligent delivery of information must attain maturity levels consistent with enterprise goals and must employ the appropriate technology to facilitate this purpose. In today's heterogeneous enterprise environment, you need to consolidate data, deliver it as useful and relevant information and provide all the necessary knowledge that empowers you to make the right business decisions. You also need the capability to automate the delivery process as well as routine business actions. Computer Associates International, Inc. (CA) delivers a comprehensive information management solution under its CleverPath™ brand that enables you to leverage your enterprise data resources to enhance your bottom line.

Information is Action Waiting to Happen

An organization's ability to learn, and translate that learning into action rapidly, is the ultimate competitive advantage¹. Much of an organization's information today has been collected, processed and stored by information systems. Billions of dollars are spent annually on information technology, but enterprises are still not in a position to translate that information into action. The problem is the approach. How you gather, manage and use information will determine whether you win or lose². Even with the availability of vast amounts of information, many enterprises are unable to use these resources to their benefit. This means the holy grail of information technology is not just getting the right information to the right person at the right time, but also going farther to facilitate automation of intelligent action. It is using all of the information available to the organization to cause an individual or system to take actions that will result in the maximum benefit to the organization.

From Data to Action

Though most enterprises have a fair idea of information management, many lack a basic understanding of what constitutes information. Terms such as data, information, intelligence and knowledge are often used interchangeably. However, they are very different things.

- **Data** is raw, unprocessed information. It is a collection of facts, figures and records that may not hold any insightful value by themselves. A flat file in spreadsheet or text format is an example of data.

- **Information** is processed data. Data needs to be sorted, arranged and presented in a format that is understood by the user before it can be considered information. Reports or charts based on spreadsheet data are examples of information.
- **Intelligence** pertains to the processes that enable conversion of information to knowledge through contextual understanding.
- **Knowledge** is processed information applied to specific purposes. Information alone may reveal facts, but those facts may or may not be usable. The fact revealed by information to be useful, trustworthy and valuable to the enterprise is considered knowledge. For example, you can use intelligence technologies, like clustering or other data mining techniques, to glean knowledge from customer purchase information about the likelihood of defection or cross-selling opportunities.

The distribution and application of accurate and trustworthy knowledge results in action that is conducive to the growth of the enterprise. Undoubtedly, the amount of data in your enterprise will continue to grow. Processes must be implemented to manage data, convert it to useful information, and to disseminate knowledge to appropriate decision makers.

Information Needs to be Managed

There are several factors in business environments today that accentuate the need to manage the information requirements in the enterprise. Some of the key factors are:

- **New economy.** The business environment is very different today than it was even a few years ago. Information is undoubtedly an important corporate asset and is crucial to facilitate the smooth operation of the enterprise. Business needs are changing as well. In many cases, information is no longer a nice addition, but a requirement. Corporate governance requires certain kinds of information to be made available to appropriate requestors. Enterprises are going through major restructuring to ensure that all the information requirements are met. Security is a top priority and information must be protected at all times without making it difficult for the right people to access it.
- **Heterogeneous technology.** Enterprises have heterogeneous technical environments, ranging from decades-old mainframe systems to state-of-the-art intelligence tools. Heavy investments have already been made in legacy systems that cannot be replaced. This means that new technology should work with old systems, whether directly or through appropriate middleware. Information exists in different formats throughout the organization and must be made available to the appropriate users without exposing the rigors of data collection, transformation and integration.
- **Changing user needs.** Knowledge workers understand that the right information at the right time can help them make better decisions for the organization. The ready availability of contextual and relevant information is crucial to success. As employees become more and more mobile, the adoption of wireless technology is proliferating in the enterprise. Wireless delivery of information has become an important requirement for many of these mobile knowledge workers. Users are more tech-savvy than ever before, and are demanding real-time access to information with the best possible quality of service to facilitate their efficiency and productivity.

With the ever-changing economic, social and political climate, information continues to be a powerful force that equips decision makers on all fronts to make the best choices. It is important to understand where your organization stands in terms of the quality and effectiveness of your information delivery process, and how you could best utilize information resources.

Enterprise Information Delivery Challenges

It is obvious that enterprises have to deliver knowledge to the appropriate requestors in a timely and convenient manner. To do this, several challenges must be overcome.

- **Data exists in heterogeneous formats and in different locations.** Different kinds of data may be stored in different formats. For example, the sales data might be in relational databases at your headquarters in Atlanta, while support information might be in a legacy mainframe format in the Austin data center. Moreover, some information might still exist in a hard copy format. This presents a considerable challenge to collect, arrange and disseminate data that is requested from multiple systems.
- **Information is not always readily available.** Timely information can be the difference between a good and bad decision. Information should be published in such a manner as to make it readily available to only those who need it when they need it, and only to those who need it. This requires understanding the roles and responsibilities of individuals and work groups and their unique information requirements.
- **Just because you have data doesn't mean you have the information you need.** This may seem like an oxymoron in the age of information overload, but the hurdles of data extraction, transformation and context creation have severely restricted the amount of information that can actually be made available. Complete contextual data is extremely difficult to come by, let alone locate and identify. Data in itself has no value until it is presented as useful, trustworthy information within context.
- **Information-sharing is a complex task.** Intellectual assets, unlike physical assets, increase in value with use. Properly stimulated, knowledge and intellect grow exponentially when shared³. If organizational structures are independent silos, information-sharing is virtually non-existent, thus seriously hampering the growth of the enterprise. The challenge here is to organize the information in such a way as to enable effective sharing.
- **Information may be available and complete, but not necessarily relevant.** Relevant information provided to the decision maker dramatically increases effectiveness and productivity. Intelligence needs to be applied to the data so that only the information that is relevant is delivered to the appropriate individual or system. For example, a technical support manager

might have access to specific customer satisfaction reports, but the ones that are most relevant to him would be customers with issues open for extended periods of time.

- **Applying intelligence to information to facilitate automatic action is a complex process.** Intelligence needs to be applied to the information to automate as much of the routine decision making as possible to free up individuals to take those actions that only they can take. A concurrent task is to present the information in such a way as to cause the system or the individual to act spontaneously.

These are daunting challenges and not likely to be accomplished in a single step by any organization. Today, most enterprises use point solutions to tackle different aspects of information delivery. For example, you can deploy a data transformation tool from one vendor, an OnLine Analytical Processing (OLAP) tool from another, and a reporting tool from yet another. This best-of-breed (but extremely fragmented) approach fails to look at the information delivery problem as a whole, and though it solves specific issues, it does not facilitate the effective flow of information to equip decision makers. The right approach to tackling the problem of intelligent information delivery is to start at the data level and build upon it in a progressive manner.

Information Delivery Maturity

Information delivery maturity can be described as the ability of an enterprise to deliver the right information, to the right person or system, at the right time, in the right format, in an intuitive, flexible, convenient and secure manner, so that the right action is facilitated. The process of applying intelligence to convert information to knowledge and provide the means for the enterprise to act upon this knowledge is fairly complex. A good understanding of the issues surrounding the management and delivery of information is imperative for success.

The process to manage and deliver information can be summarized as follows:

- Make data centrally accessible and available to the appropriate people safely
- Process the data into trustworthy information that is understood by the user
- Present information in the context of the user's requirements
- Use the information to automate appropriate processes

Each of the above stages signifies different levels of maturity that your enterprise can achieve when it comes to delivering information to decision makers. Each stage tackles various challenges associated with that level, effectively moving the enterprise from one maturity level to the next.

A New Paradigm for Intelligent Information Delivery Maturity

After years of research and work with several customers at various stages of technology adoption and evolution, CA has developed the Intelligent Information Delivery Maturity Model, which assists enterprises in identifying their current environment as well as enabling them to aspire to higher levels of information delivery, relevancy and analysis. There are four levels of information delivery, and as enterprises grow from one level to the next, they gain the ability to control and use information within the organization as knowledge to make better business decisions, and ultimately to enable the information system to automate routine actions, enabling individuals to act on exceptions.

Each level targets specific information delivery challenges faced by the enterprise, as depicted in Figure 1. Once you achieve a certain level, you will encounter new challenges that will cause you to aspire towards the next maturity level. You will also realize that it is virtually impossible to go back to lower levels simply because you cannot afford to compromise the efficiencies you achieved at a particular level.

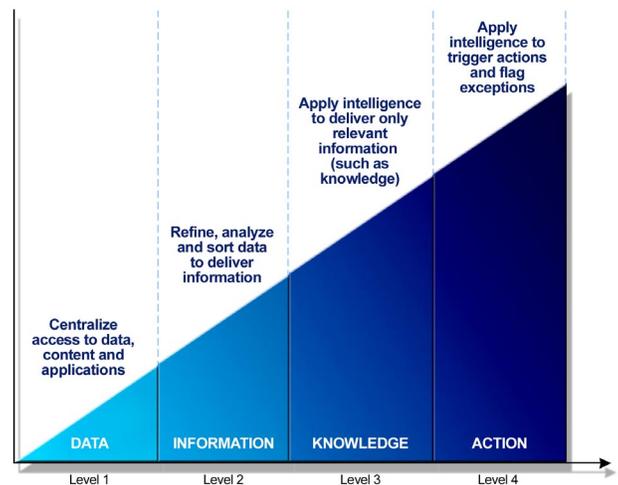


Figure 1: The Four Levels of the Intelligent Information Delivery Maturity Model

Level 1: Centralized Access to Data, Content and Applications

With the Information Age emerged the “information glut.” Most enterprises are so overwhelmed with the amount of information in the organization that they seldom know where to find the right information.

A common problem for organizations that need to reach Level 1 information delivery maturity is that they are drowning in data and waste too much time getting access to it. In this environment, decision makers have an unhealthy reliance on IT to supply them data and as a result, a major proportion of their time is lost in searching for and formatting the data for appropriate use. In many cases, business processes are still manual and a lot of data resides on paper.

Level 1 focuses on centralizing access to data. Users save time because they know where to go to get the data they need. Data on paper and other physical media need to be digitized for easy access and longevity. Manual processes are automated to the farthest extent possible, and people are given appropriate access to the data they require to do their jobs.

Level 2: Trustworthy Information

Once the users in the enterprise have access to data in a centralized manner, a common problem is that there is too much data and too little information. A lot of time is spent cleaning and formatting the data to glean information. In fact, most of the time the data is meaningless to them unless presented properly, in which case there might be valuable information they could use.

Level 2 is about transforming raw data into information that is objective, trustworthy and usable. This often involves the automatic refining, sorting and analysis of data to present information to the user in a manner that is clearly understood.

Level 3: Relevant Information as Knowledge

Having good and trustworthy information is critical to any business environment. However, knowledge workers and decision makers often find that there is far too much information presented to them that is not relevant to their job function and that they have to sift through all the available information to get to what they really need. Many times, the decision makers are unaware of all the information available to support their roles. A familiar scenario is that of a manager receiving a large stack of reports to peruse without any indication of what information within that stack is useful to his or her role.

Level 3 involves the application of operational intelligence tools to extract and deliver relevant information and knowledge to the decision makers, taking their individual roles into consideration. Filtering out unnecessary information and only delivering relevant knowledge saves a significant amount of time, and enables knowledge workers to make better decisions quickly.

Level 4: Intelligent Action

Relevant knowledge equips decision makers to work better. However, there will still be situations in which the users will have to be personally involved in taking most of the actions and doing all the work. In many instances, they are still making mundane decisions and are not adequately informed of exceptions and potential problems. At this point, organizations need to apply the appropriate intelligence tools to free up the decision maker’s time by automating all repetitive and mundane actions.

Level 4 empowers users to set up custom rules that apply to their unique roles, responsibilities and experiences so as to receive the appropriate information and automate the process of taking the necessary action.

Continuous Evolution of Information Delivery Maturity

Despite the wide availability of business intelligence and knowledge management tools, enterprises still struggle to attain and maintain high information delivery maturity levels. Many still strive to move beyond simple data access into more sophisticated realms of analysis and personalization. Once an enterprise attains a particular level of information delivery maturity, they perceive it as being inadequate and they aspire to reach the next level. Interestingly, in many cases the levels might not necessarily be achieved sequentially, even in the same organization.

Each level is valuable in its own right and it does not necessarily mean, for example, that Level 2 is more valuable than Level 1. Each level delivers specific ROI to a specific group of people whose requirements are met at that level. Enterprises will derive value at every level, and this value is relative to the business needs at that given point in time.

Figure 2 shows the various levels in the Intelligent Information Delivery Maturity Model. The information needs in an enterprise will continue to change, and it is important to evolve and strive to attain higher levels of information delivery maturity. It is also very likely that the information needs within different departments of

an organization might not be the same. The question then becomes whether you should move all your departments to a particular level at the same time, or let each department mature to the desired level at its own pace. It really depends on how your organization is structured and what priorities have been set. It is quite possible for different departments within the enterprise to be at different levels at the same time in order to fulfill their business needs, while constantly pursuing higher maturity levels. Experience gained from evolving to high maturity levels in one area of the enterprise can be applied to other areas as well. No matter which approach is adopted, you need to deploy the appropriate architecture to support this evolution and maturation of intelligent information delivery.

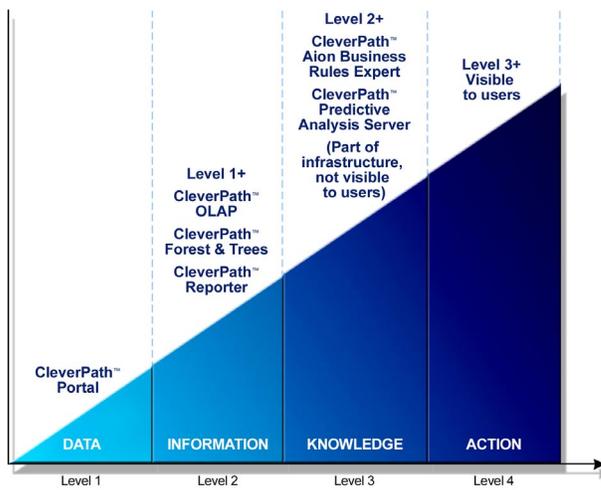


Figure 2: Enterprise Challenges to Intelligent Information Delivery

New Architecture Facilitates Intelligent Information Delivery Maturity

To facilitate a smooth-flowing progression from one information delivery maturity level to the next, enterprises need to deploy a robust yet nimble architecture. The architecture must support a comprehensive view of business intelligence in the enterprise, while facilitating the efficient delivery of information, as shown in Figure 3.

The components of this architecture do not stand alone. They are services that work in conjunction with each other with seamless integration. Following are the critical components of the mature intelligent information delivery architecture.



Figure 3: Architecture to Facilitate Intelligent Information Delivery Maturity

Presentation Services

At the highest level, the user needs to have access to the required information in the appropriate format. User interface is an important consideration in delivering information to knowledge workers. The user view must be customizable and personalized so that you receive the information in reference to your context⁴. The back-end operations should be invisible to the user, whose only interest is to get the required information. Appropriate visualization capabilities must be employed to deliver the relevant information in a manner that is understood by the users. With the increase of mobile workers in the enterprise, the presentation services must deliver information to wireless devices with limited screen sizes in the appropriate manner. Instead of logging on to different URLs for information in different formats, the presentation mechanism should serve multiple enterprise-approved devices, regardless of their type.

Portal technology is very effective in delivering a common interface to disparate systems in the enterprise. The portal, however, must integrate with and support business intelligence technologies along with enabling the creation and management of collaborative communities to facilitate the dissemination of knowledge. Advanced content management capabilities must also be supported.

Specialized Knowledge Services

With appropriate access to data in place, specialized knowledge tools enable you to extract relevant knowledge and deliver it to decision makers. The following components are required to facilitate this process:

- **Data transformation tools.** These enable you to organize the data in your enterprise and present it in appropriate formats so that further analysis and processing can be done with minimum effort.
- **Query and reporting tools.** Information needs to be presented in a manner that you understand. These tools enable you to query data repositories and generate reports that are meaningful.
- **OLAP tools.** These enable you to perform complex data mining operations and extract knowledge that can be applied to your business process.
- **Predictive analysis tools.** This is an excellent way to glean knowledge from static data, monitor business activity and extend intelligence to the decision makers. These tools enable you to build knowledge models from specific business data and predict future outcomes.
- **Automated business rules engine.** This enables you to automate and manage complex business rules in the enterprise environment. Existing knowledge about business processes needs to be preserved and executed. Business rules engines facilitate this process.

Knowledge tools must be used together to provide more comprehensive business intelligence solutions⁵.

Management Services

To facilitate the smooth flow of information and organize the complex procedures of gathering, processing and disseminating information, advanced management tools are required. The overall quality of service must be monitored and the appropriate service levels must be delivered. In most organizations today, management services are duplicated in several areas, creating distinct silos that impede overall enterprise management. Management services in the new architecture are interoperable and cross over functional silos to create a robust and seamless mechanism to manage the various components of the enterprise.

Following are the services necessary for implementing robust management of your information assets:

- **Security.** Information is a valuable asset and it must be protected. Measures must be taken to administer the appropriate rights and privileges of accessing information in its various forms. Access control is critical to

promoting a safe environment for information to be created, accessed and disseminated. When information resides in multiple systems, single sign-on must be deployed to promote convenient and secure access. Confidential information must be restricted to duly authorized personnel, and security policies need to be centrally managed and enforced.

- **User management.** User meta data is important to maintain and manage for overall security and efficient operations. The users must be authenticated and receive access to all authorized information.
- **Scheduling.** You must be careful to execute business processes according to the guidelines laid out by your enterprise. An appropriate scheduling mechanism must be deployed to ensure that no step is incomplete in the overall flow of information in the organization.
- **Content management.** Information can be in various media forms — structured data, unstructured data, spreadsheets, PDF files, audio files, graphics, video files and other forms of multi-media. These assets must be organized and managed efficiently so that there are no problems in accessing them. Users must be notified about updates, modifications and other changes to relevant content.

Managing information must tie back into the management of the entire enterprise infrastructure and systems. An integrated view of management and security is important to facilitate successful implementation of a mature information delivery model.

Data Access Services

Enterprises have data in multiple formats, including relational databases, legacy mainframe data, proprietary formats and others. At the point of decision making, you are interested in getting access only to the required information and should not be concerned about the format of the data or where it resides. Data access services allow the information delivery system to access the data requested, regardless of the format or physical location. The aggregation of the data from multiple sources must also be facilitated without causing a drain on the system or prolonging the time you have to wait to see the information you need.

For an enterprise to be successful in delivering intelligence to decision makers in a customizable and personalized manner, it is essential to choose the right solutions that address the challenges in each maturity level and enable you to move to the next level.

Computer Associates: Delivering Intelligence for Business Value and Insight

CA's CleverPath brand delivers unique capabilities that support a broad range of new and emerging standards to enable enterprises to achieve high levels of information delivery maturity. Today's enterprises need the capability to go beyond information retrieval and provide business executives with an intelligent view of their business. By enabling applications to intelligently adapt to changes in the business processes, CleverPath maximizes the use of information as an active asset, turning information into knowledge, and knowledge into action.

CleverPath solutions address each level of the maturity model. They help you achieve all the benefits of your current level and move to the next level. Solutions for a lower level are also applicable for use at the next level. For example, solutions that address the problems faced in Level 1 continue to operate when the organization reaches Level 2. In fact, enterprises leverage the benefits of the lower levels to enhance the achievement of higher levels. Following are the CleverPath solutions and how they apply to the information delivery maturity model. Efforts are underway to provide these solutions in a services-oriented architecture.

Centralized Access to Data

At Level 1, portal technologies, along with data access and transformation tools, provide centralized access to data, content and applications through customizable web and wireless interfaces.

Personalized Presentation Services

CleverPath™ Portal integrates data into a personalized, intelligent and engaging environment that can be accessed from many devices, including web browsers, WAP phones and wireless PDAs⁶. Virtually any information, regardless of its source, can be presented and secured through CleverPath Portal to provide a medium for collaboration and effective decision making. CleverPath Portal can also seamlessly display data from legacy systems and is completely platform-independent. It also facilitates the delivery and deployment of Web services in both .NET and J2EE environments⁷.

Equipped with comprehensive content management capabilities, CleverPath Portal enables you to capture, store, manipulate, retrieve and publish various types of digital content, including video, audio, graphics, text, presentations, artwork, documents and more.

Integration of CleverPath Portal with CA's eTrust™ security solutions provides capabilities to augment existing security measures.

Data Access and Transformation

CleverPath data transformation solutions enable you to quickly build and deploy enterprise data stores, data warehouses and data marts by integrating disparate data from multiple sources into a meaningful form. Whether you're integrating data due to a new ERP system, a merger or acquisition, responding to regulatory mandates or for analysis and reporting, these solutions easily extract, transform, aggregate, replicate, synchronize and load data to or from multiple sources without additional coding.

Trustworthy Information

At Level 2, reporting tools, OLAP, digital dashboards and other solutions deliver trustworthy information and support critical decision-making activities.

Analytical Processing

CleverPath™ OLAP provides multi-dimensional analysis of large volumes of business data. It has a flexible and open point-and-click development environment, and web- or client-based deployment environments to deliver analyses directly supporting business processes. This solution can discover correlations between user-selected variables through its sophisticated analysis capabilities, including transaction-level drill-down, pivoting and ranking. Its multi-tier architecture, with server-tier OLAP processing, supports multi-terabyte-sized data stores with unparalleled scalability and performance. Support for all popular relational databases leverages existing skills, procedures and knowledge. Integration with CleverPath Portal allows users to leverage analyses with other information and applications, and also enables deployment to a broad audience, promoting collaboration within communities.

Reporting

CleverPath™ Reporter is an enterprise-class reporting solution that delivers desktop and server-based reporting. You can easily integrate multiple queries across distributed databases and platforms, create sophisticated reports, and schedule them for automatic execution and delivery via your network or the Web, enabling information access and reporting for novice and expert users.

Sophisticated Charting and Graphing

CleverPath™ Forest & Trees® provides a feature-rich, visual development environment with extensive data

access capabilities. This enables an organization to build, deploy and leverage compelling Executive Information Systems (EIS) and Decision Support Systems (DSS). This intuitive, user-friendly development environment accelerates time-to-market by offering context-sensitive help, graphical wizards and troubleshooting facilities. CleverPath Forest & Trees supports comprehensive query, analysis and reporting requirements, including a managed query environment that enables non-technical users to easily develop and safely execute information requests. It also supports rapid content development for deployment using CleverPath Portal. With CleverPath Forest & Trees, development teams can quickly build customized applications that transform business data into business intelligence.

Relevant Information as Knowledge

At Level 3, rules engines and predictive analysis tools drive the capabilities to deliver relevant knowledge to decision makers.

Automated Business Rules

CleverPath™ Aion® Business Rules Expert gives organizations the ability to capitalize on near-term market opportunities, re-engineer business processes and implement new business models with unprecedented speed and accuracy. CleverPath Aion Business Rules Expert also relieves the pressures on already overburdened corporate IT departments by allowing non-technical business personnel to modify their own business application rules as dictated by changing conditions and/or objectives. The ability to react quickly to change is a key factor for business success. By giving corporate decision makers the ability to immediately translate their new or revised business policies into live code themselves, CleverPath Aion eliminates this primary impediment to change, thereby giving you a significant competitive advantage over your competitors.

Operational Intelligence

CleverPath Predictive Analysis Server rapidly analyzes and extracts critical business knowledge from data, revealing significant factors that can impact your organization's success, allowing you to predict future outcomes and achieve the business results you need to stay ahead of the competition. This solution delivers real-time monitoring, detection and predictions that enable you to offer individualized service to your customers, partners, suppliers and employees, enhancing user satisfaction. Intelligence models specific to your business needs can be generated and embedded into applications in a very short amount of time.

Visualization

CleverPath visualization services add a new dimension to decision making by condensing business information into intuitive and attractive visual components. With visualization, today's enterprise can effectively present volumes of data in unique and compelling ways using high-resolution 2D and 3D representations, animation and interaction. CA's visualization technology helps you bring enterprise information to life, adding value to your business process and giving you a significant competitive advantage.

Intelligent Action

At Level 4, the previously mentioned operational intelligence solutions — CleverPath Aion Business Rules Expert and CleverPath Predictive Analysis Server — along with solutions from previous levels are used to automate repetitive actions and flag exceptions. This enables you to take maximum advantage of your information resources and connect your business intelligence into your day-to-day operations.

Value-Add Solutions

To generate success in all parts of the enterprise, systems in different functional areas must integrate with other appropriate systems. Certain infrastructure management functions, such as security, must be applied to all aspects of the enterprise, including all the information delivery mechanisms.

Security

CleverPath leverages sophisticated security technology from CA's eTrust family of solutions that cater to different aspects of enterprise security needs, including information security. Detailed authentication and authorization is provided by eTrust™ Web Access Control so that users get access to the information they need, while intruders are prohibited for entering. eTrust™ Single Sign-On ensures that users get access to all necessary systems in a safe and convenient manner. eTrust™ PKI manages digital signatures that authenticate the electronic transfer of sensitive information. Viruses are prevented from destroying data and system files on servers, desktops, laptops and mobile devices using eTrust™ Antivirus.

Management

To maintain and manage the entire information delivery domain, CleverPath seamlessly integrates with various solutions within the Unicenter® brand to provide key management capabilities not just for the hardware infrastructure that enterprise information resides on, but applications and systems as well. Unicenter solutions

also enable you to maintain quality of service by monitoring service level agreements and alerting the appropriate parties of possible or actual breaches.

Managing information and delivering knowledge to decision makers within the enterprise is complex, but not impossible with the right choice of tools. With a proper understanding of your enterprise's current information delivery maturity and the right tools, you can successfully leverage information assets to provide maximum business value.

Maturing to New Frontiers of Intelligent Information Delivery

Delivering on the promise of the Intelligent Information Delivery Maturity Model requires integrating a number of architectural and technical components and capabilities that can work together seamlessly. Organizations need to move from one maturity level to another without having to re-engineer components. CA's CleverPath solutions enable you to implement intelligent information delivery immediately to derive the benefits of your enterprise's current information maturity level, while preparing you to move to the next level.

The following guidelines are critical to ensure successful delivery of information to your decision makers:

- Keep an enterprise-wide focus while planning to deliver information to your decision makers.
- Determine the current maturity level of information delivery in your organization.
- Achieve the desired benefits of your current maturity level first.
- Build on your successes to move to higher maturity levels.

Understand that there will be several parts of your enterprise with different maturity levels, each striving to reach for higher levels.

CA delivers comprehensive and integrated solutions to enable you to deliver the right information, at the right time, to the right people, in the right format, so that you are empowered to make the most effective decisions.

For more information, call 1-877-638-4368 in North America. Outside of North America, contact your local Computer Associates office, or visit ca.com.

Footnotes

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