What is Exsys CORVID?

Exsys CORVID® is a knowledge automation expert system development software tool for capturing and disseminating decision-making expertise. It is based on proven techniques of expert system theory and 20 years of experience in designing interfaces that enable experts to describe how they make decisions. Exsys CORVID represents a totally new paradigm for the distribution of online expertise that provides answers, not just information, to clients, prospects and employees. The product is designed to enable domain experts to quickly and easily develop decision support systems using everyday language without having to learn complex, arcane programming syntax. Developed applications can be delivered via the Web using the Exsys CORVID Servlet and Applet Runtimes or run as a standalone Java application.

Why did you develop the Exsys CORVID product line?

Exsys CORVID came from a fresh reexamination of what is needed to capture and distribute decision-making knowledge in today's Internet-oriented world. CORVID was designed to move forward from our earlier proven and successful tool, EXSYS Developer. EXSYS Developer and its predecessors had been used by thousands of companies as the industry standard since the early 1980s, to build and field expert systems worldwide. However, its underlying architecture did not allow it to be easily extended to integrate with current Web-based methodologies. Exsys CORVID is a whole new approach to knowledge automation expert system development based on over 20 years of working with system developers. This background provided a unique perspective on what features and capabilities work best. The resulting CORVID products combine an easier to use development environment to build powerful, flexible and easily maintained systems for delivery via Java applets, servlets and stand-alone applications.

Who is EXSYS?

Founded by Dustin Huntington, EXSYS Inc. brought practical expert system development to the PC in 1983, and was the first company to bring knowledge automation to the Web in 1996. EXSYS has 20 years experience in providing cost-effective software, training, support, and consulting to help businesses and organizations deliver knowledge and decision-making expertise throughout their organizations - to prospects, clients, partners and employees. EXSYS software is the longest lived such product on the market, with continuous use in business, industry and academia worldwide.

How will business, customers and employees benefit from implementing Exsys CORVID systems?

The Web has become most company’s primary means of communication both internally and with customers. Currently, most Web sites are just providing information. They leave visitors with the daunting task of sifting through mountains of data to find what's relevant to them, and then they are expected to be able to make decisions based on it. EXSYS products and services provide ways to capture expert knowledge and decision-making processes in ways that allow computers to emulate the interaction people have with human experts to

solve problems. Expertise is more than facts and data; it's knowledge that provides the correct recommendation based on each individual's particular situation and needs.

Exsys CORVID provides unique, interactive "experts" that deliver individualized decision-making knowledge from a Web page, or stand-alone systems. EXSYS software allows expert knowledge to be captured in a form that makes it deliverable via the Web to improve performance, capability and efficiency, while reducing training and costly errors. EXSYS products are used by over 50% of the Fortune 100 companies, many Government agencies, and thousands of businesses and organizations. EXSYS's client base has a proven track record of successful knowledge automation expert systems providing significant cost savings, increased profitability and a competitive edge to their Web sites.

What is "Knowledge Automation" and how is this the next generation of expert system technology?

"Knowledge Automation" is a paradigm shift in how companies interact with their customers and employees. It captures useful organizational processes and decision- making for the purpose of enhancing operational effectiveness. With **Exsys CORVID** systems, Web sites reach a level where they can provide more than just data. They can emulate "consultations" with specific domain experts to solve problems.

Experts solve problems systematically - one step at a time, fitting facts together to arrive at conclusions, laying the groundwork for good advice. Experts understand causes and implications, ask only relevant questions, and weigh alternatives. Exsys CORVID knowledge automation expert systems follow the same process as human experts, reaching the same conclusions, consistently making the same recommendations. Exsys CORVID makes it practical to build and field systems on a Web site to provide advice on everything from product selection, customer support, predictive maintenance, process monitoring, regulatory compliance and many other areas.

What is unique about Exsys CORVID's approach compared to other decision-support techniques?

Other approaches to decision support are based on providing a trained user with the data that they can use to help make a decision. This requires that the user be trained to a level of expertise that enables them to make decisions, recognize special cases, remember exceptions and stay up-to-date on any changes. **Exsys CORVID** uses the approach of directly delivering knowledge rather than data. The user is asked questions, and based on their input, they are provided with an analyzed decision specific to the individual situation. The user does not require training and does not need to remember or examine competing options or exceptions. That is automatically done in an Exsys CORVID knowledge automation expert system. When the background knowledge changes, or a new factor is added, all that has to be done is a simple modification of the rules or external database.

Unlike other decision support approaches like data mining or case-based reasoning, EXSYS provides the only interactive technology that always provides direct delivery of "best fit" recommendations to end-users. Human decisions are thought of and described by people as, "If...Then" type logic, which does not easily convert to the internal representation of some other expert system tools. The expert building the system is forced to change the way they think about their decision-making process, which is counterproductive to efficient and maintainable system development.

Exsys CORVID provides knowledge representation that makes it easier to build systems, without requiring the developer to change the way they think and describe their decision-making steps and problem-solving logic. The result is a very flexible and powerful development environment, which can be easily expanded.

How does Exsys CORVID capture decision-making expertise?

Exsys CORVID provides a visual development environment that makes it easy to "describe" the steps in a decision-making process. The logic is easy to read and understand. Domain experts can build applications themselves, or work closely with the knowledge engineers, allowing systems to be rapidly completed. The EXSYS Inference Engine automatically uses the rules to determine what questions to ask, combines the user information, and provides customized recommendations.

Exsys CORVID software provides all the power and flexibility needed to handle most problem-solving situations whether simple or complicated. Several interfaces and controls are available including database connectivity, Web integration, and a range of other features. Systems can be deployed to run as servlets from a server, client-side Java applets, or stand-alone applications. Logic Block diagrams are used to describe the individual pieces of the decision-making process. The CORVID Inference Engine combines these groups of rules through backward (or forward) chaining to determine what pieces are needed and when to use the rules to reach the desired conclusions. Procedural commands control the flow of execution. The logic of the process is described in English and algebra. There is no complex syntax to learn and the rules are easy to read, understand and maintain. The logic can be viewed simultaneously in tree diagrams to see the overall structure, and as full text of individual rules. The Inference Engine allows large, complex problems to be broken into small discrete parts, making system development much easier and faster.

To build a system, do I need to be a "knowledge engineer" or an expert system specialist?

You do not have to be a knowledge engineer to build expert systems with **Exsys CORVID**. It has been designed to be easy to use. EXSYS has thousands of users worldwide with no formal training in programming or knowledge engineering that have built powerful and effective expert systems. A tutorial is included with purchases of Exsys CORVID, which teaches the fundamentals you will need to build your first systems in a few hours.

A 3-day training class is available either on-site at your location, or at the EXSYS Training Center in Albuquerque, NM. Students are provided with one-on-one instruction and a practical hands-on laboratory to cover everything needed to start building their own systems. EXSYS is also extensively used at hundreds of universities in classes covering decision support, e-commerce, engineering, medicine, and many other departments. Several textbooks are based on Exsys software including the recently published **"Building Knowledge Automation Systems with Exsys CORVID"**.

To get knowledge automation expert system projects built and fielded quickly, EXSYS offers customized consulting. We can work directly with domain experts to help them explore a variety of system applications, determine the best approaches, extract and implement decision-making expertise into full-function knowledge automation systems and integrate them into existing MIS structures.

Will Exsys CORVID system fit into my existing IT structures and how are they deployed?

An **Exsys CORVID** knowledge automation expert system has two parts, the logic of the decision making process, and the end user interface. The logic is the same regardless of how it is distributed, but the same system may have different interfaces. It can be interactive with the end user, or be invisibly embedded within other applications.

On the Web, a system can be delivered as a Java applet and run client-side, or run as a servlet with all communication going to the end user via HTML forms. The applet approach is very easy to field since it just requires adding an applet call to a Web page and putting the required files on the server. Commands within the system allow you to specify how questions and results will be presented in the applet window. HTML or RTF reports can be built and displayed in separate browser windows. The servlet approach simply requires a server that supports servlets, and it is easy to implement. HTML templates are used to specify the visual look the system, making it easy to match the elements of your Web site using all of HTML's capabilities for design and functionality. The same system can be delivered both ways depending on the situation. Systems can also be run as standalone Java applications with may ways to access and pass system data on for integration as "front-ends" to other programs.

Do knowledge automation expert systems "think" and "learn"?

Computers don't think - people do. Expert systems can capture the existing knowledge in your organization to apply it to repetitive tasks such as product recommendations, filling out forms, recurring technical support calls, equipment repairs, and customer service requests. Expert systems can save an enormous amount of time and money by automating solving well-understood common problems. This frees up the experts from repeated interruptions so they can handle unique and creative tasks.

Likewise, expert systems don't learn in any valid sense of the word. There have been so-called "learning" approaches that tried to build expert systems that could add rules to themselves, but this has not proven to be a practical approach - and very prone to errors. At EXSYS Inc, we feel that the way to make a system "smarter" is to provide tools that enable the developer to easily modify and enhance the system. The developer can understand the implications of a change in the logic - not the computer.

What are the best types of problems to solve using Exsys CORVID?

Exsys CORVID systems are most beneficial for distributing the decision-making knowledge on commonly occurring problems that are well understood or documented by the experts. Selecting a common problem guarantees that the system will have rapid ROI by reducing the repeated workload of solving the problem. Also, commonly occurring problems are ones that the experts most fully understand. They know all the exceptions and can describe the logic of the decision-making process fully.

Some knowledge automation areas to consider:

- Decision Support/Business Intelligence
- Compliance - Regulatory/Policy/Procedural/Human Resources
- Product Selection/Recommendation
- Information Management/Reporting
- Configuration/Scheduling
- Diagnostics/Identification
- Data & Statistical Analysis/Optimization
- Customer Support/CRM/Sales Support
- Troubleshooting/Repair
- Inconsistency Detection
- Smart Questionnaires
- Training/Online Instruction
- Process Control/Quality Control/Simulation
- Predictive Maintenance/ Monitoring

- Planning/Design/Projections
- Web Sites/Intranets/LANs/Laptops/Wireless

Some types of problems to avoid:

- Problems where the expert can't teach another person to solve them. If you can't teach a person how to solve the problem, it will not be practical to teach a computer to do it.
- Problems that require innovative solutions where there is no defined logic on how to make the decision, like those requiring an esthetic or emotional factors.
- Problems that are too large and abstract - stick to problems that can be precisely defined.

What types of industries use EXSYS knowledge automation expert systems?

From academia, to satellite diagnostics, to zymurgy, the EXSYS client base covers a broad spectrum of industries including:

- Aerospace / Airlines
- Accounting
- Agriculture
- Architecture
- Biotechnology
- Chemical
- Compliance
- Computer Hardware
- Computer Software
- Customer Relationship Management
- Conservation
- Construction
- Consulting
- E-Commerce
- Electronics
- Energy
- Environmental
- Entertainment
- Engineering
- Financial Services
- Food & Beverage
- Geography
- Government
- Help Desk
- Human Resources
- Insurance
- Information Management
- International Trade
- Legal
- Manufacturing
- Process Control
- Marketing / Sales
- Medical / Healthcare
- Military
- Mining
- MIS
- National Laboratories
- Non-Profit
- Oil & Gas
- Pharmaceuticals
- Publishing
- Quality Control
- Real Estate
- Retail
- Research & Development
- Science
- Telecommunications
- Transportation / Shipping
- Travel
- Universities
- Utilities
- Web / Internet Development

What are Exsys CORVID W.I.N.K. Site Guide Systems? How are they different from search engines?

Exsys CORVID W.I.N.K.TM (What I Need to Know) Site Guides are easy to develop and maintain knowledge automation systems. They dynamically build Web pages of customized information based on the specific needs of individual prospects, customers, partners and employees.

Search engines provide pages of information based on words or phrases that may not come up with answers people are looking for. WINK systems use Exsys CORVID's software and Inference Engine to provide Web-based expert "consultations" that ask questions and determine what content is relevant to a visitor. A custom Web page is compiled, based on logical criteria built into the system, that includes all of the applicable information specific to their interests and requirements. This saves time, and provides compelling content without visitors having to browse through information they don't need.

The more complex a site, the more it needs WINK to organize and present information. The Web makes it possible to have very extensive sites with different levels of content for many types of visitors. However, site visitors can often become confused and frustrated drilling down through many layers of information to find the answers they need. WINK provides an effective way to deliver content customized for each Web site visitor based on logical rules, rather than relying on random browsing.

A CORVID WINK system can use sections of HTML from pages already on a Web site. The ability to use existing Web pages to add specific items into WINK's automated results, greatly simplifies building this new type of interactive online system, and allows easy reuse of site content. Exsys WINK Site Guides empower Web sites with unique interactions that save time, lower costs, increase site traffic, and result in increased customer satisfaction, repeat sales and a unique competitive edge. WINK Site Guides assure that Web site visitors are given information that they need, and that they get their questions answered.

How can this technology be used throughout enterprise corporations?

Companies have a tremendous need for the distribution of knowledge. The cost of training staff and consequences of mistakes is enormous. In most companies the vast majority of questions that come up everyday on specific subjects, can be answered by a small, well-defined set of logic - and there is probably someone in the company that can rapidly describe the logic. There are great benefits to having many pieces of decision-making knowledge preserved and made widely available - but it takes a change in the way people think about distributing knowledge. With approximately the same amount time and effort put into writing a manual or "Standard Operating Procedures", an **Exsys CORVID** system can be built and fielded that will automate the knowledge and make it available to all. Companies that have made widespread use of expert systems to distribute knowledge have shown tremendous benefits and savings.

Expert systems built with CORVID bring the knowledge, processes, and logic that comprise the thinking of an organization to bear on the problems at hand. This knowledge can then be distributed to allow prospects, customers, employees, and other interested parties to take appropriate action, or make the right decisions without overlooking important factors. Expert systems make sure that the necessary logic and decisions steps are consistently and appropriately applied.

I already know building and implementing these systems are beneficial. Give me a compelling, bottom-line statement, or examples I can show management to move forward.

Exsys CORVID knowledge automation expert systems have a proven track record of reducing costs and increasing productivity. EXSYS products are used by over 50% of the Fortune 100 companies, many Government agencies, and thousands of businesses and organizations. The return on investment by implementing advisory systems throughout an organization and on Web sites has proven phenomenal. A few examples include:

- DuPont has realized a 100-to-1 R.O.I. from implementing expert systems. For every $10,000 spent to develop expert systems they realize $1 Million in savings and profits - adding up to over a $1 billion!

- The US Air Force Oil analysis programs reported a total cost avoidance figure of $15 million dollars in F-16 engine damages. A conservative estimate for the total cost avoidance generated in the USAF by (knowledge automation system) oil analysis would be over $100 million dollars.

- Online Advisors cover more than a dozen complex areas of OSHA regulations. More than 40,000 advisors are downloaded from OSHA Web sites per year. This innovation has saved businesses more than $100 million per year in consultants and attorney fees and continues to grow.

- Eastman Chemical connects over 400 systems with external programs. Many routine tasks are automated, which frees up the experts to tackle complex problems and better utilize their talents.

- Forrester Research states that firms believe online advice is a necessary and immediate next step to further enhance customer relationships. Businesses that master the ability to automate their expertise will be able to introduce high-end services to the mainstream market.

Many EXSYS Customer Case Studies are available on the EXSYS Web site (www.exsys.com), and several systems can be run from the Demo link. EXSYS also has PowerPoint presentations, and Web conferencing, which can include building an actual sample system as you watch.

Why is it important to implement knowledge automation systems in today's business climate?

The Web has become the primary means of communication for many companies. Business happens 24/7, around the world - around the clock. Prospects are going to Web sites to make purchasing decisions, and product support is often provided primarily online. Also, employees are expected to understand and follow company policies based on what they find on intranets. Everyone is looking for situation-specific knowledge to help with decision-making. Experts are busy people and aren't always available to help. Plus if the experts are often interrupted, productivity declines. **Exsys CORVID** knowledge automation systems are the only technology that helps businesses and organizations capture expertise and deliver it those that need it, when they need it.

More and more functions that relied on direct human contact are now being delivered via the Web. As these functions become more complex, they require more than a simple standard answer. The specific needs and situation of the user must be considered in making a decision. Knowledge automation expert systems are the most effective way to handle these situations. The ability to have Web sites with "advisors", that interact with the user as if they were talking to human experts, vastly increases the quality and scope of recommendations that can be delivered. A Web site that provides visitors with expert recommendations will attract customers, and keep them coming back. Throughout a business's enterprise, internal knowledge automation systems can make employees more productive, with less training and fewer mistakes.

Why should a corporation choose Exsys CORVID products and services over others on the market?

- **Exsys CORVID** is easy to learn and use, and systems are easy to deploy, update and maintain.

- **Exsys CORVID** is competitively priced and many businesses see a return on investment almost immediately upon deployment.

- **Exsys CORVID** was developed by a company with nearly 20 years experience in building knowledge automation expert systems products and servicing customers.

- Our top priority is making our customers successful. EXSYS has a proven and on-going track record with thousands of systems fielded worldwide. Our customer relationships cover many years, and their feedback is instrumental in new product development. Our experience with a large variety of successful applications is often drawn upon as new customers explore how to bring knowledge automation to their firms.

How can my knowledge automation expert systems be carried into future technology?

EXSYS Inc has been providing expert systems for 20 years. **Exsys CORVID** is the latest in a long line of products. But, even with new products, we have always provided a way to support our existing users with system backward compatibility and upward migration paths. The logic of systems built with our earliest tools 20 years ago have been ported through the latest Exsys CORVID tools. We are constantly watching the current technologies and have always enhanced our products to take advantage of new capabilities.

For more information and a quote on your next Knowledge Automation Expert System project contact:

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