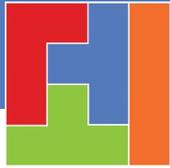


LogicNets

Expert Decision Support Automation Tech Support and Field Service 2.0

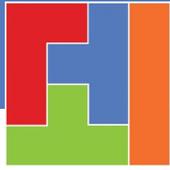
WhitePaper

November 2012



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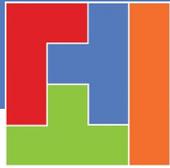
THE IMPORTANCE OF MANAGING AND DELIVERING EXPERT KNOWLEDGE

Expert knowledge is the critical element required to deliver quality technical support and field service for sophisticated products. Yet, expert knowledge is by far the trickiest asset to aggregate, retain for the long term, and effectively distribute both to internal staff and to customers. Most organizations have invested to some degree in documenting their expert technical knowledge and storing it in shared repositories that can be accessed and searched by customer-facing staff to assist in problem diagnosis and resolution. While these repositories are often very sizable, their effectiveness is limited because users are armed only with search as a means of finding data and are often poorly equipped to design relevant searches or to interpret the results captured in PDF and HTML documents. Furthermore, organizations still complain that most of their advanced expertise exists as “tribal” knowledge not captured in knowledge repositories, and the organizations are usually concerned that they will lose critical knowledge if key employees leave. Even the format of capturing knowledge through technical papers distributed as PDFs and HTML documents is limited, because these formats capture expertise that still has to be delivered manually and in an ad hoc fashion. In the typical knowledge base, there is, in fact, no automation to structure how expert knowledge is delivered. As a result, there is no guarantee that the expert process of asking questions, dynamically predicting outcomes, and determining corrective procedures will be delivered appropriately or that it could be delivered reliably by non-expert staff, or by customers themselves.

WHERE DOES KNOWLEDGE FIT IN THE SUPPORT INFRASTRUCTURE INVESTMENT?

Many organizations have invested significantly and successfully in automating and enhancing their Support and Services infrastructure, seamlessly integrating the logistics of customer relationship management (CRM), asset management, enterprise resource planning (ERP), private branch exchange (PBX), and others into a common workflow. While managing these logistics is critical to successful problem resolution, it does not actually provide a tangible value to the customer. Although he expects to assist the support team in identifying him, his products, and the unique aspects of his environment, the customer will not have a satisfying experience until some progress has been made in diagnosing and resolving his problem... the very process that is entered only after

Expert knowledge is the critical element required to deliver quality technical support.



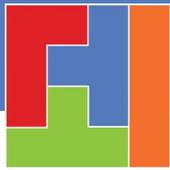
the logistics management phase has been completed! The fact is that the logistics infrastructure is basic plumbing—a level of functionality that most customers simply expect support organizations to have and one that does not exhibit to the customer any progress on his case or fundamentally differentiate the support and service of one company from its competitors. Clearly, the investment that virtually all companies have made in enhanced support logistics infrastructure is positive and important. But an organization's return on that investment cannot be fully realized with measurable improvements to customer satisfaction unless that organization also addresses the knowledge management component and brings it into balance through a concerted improvement plan.

COST IMPLICATIONS OF POOR KNOWLEDGE MANAGEMENT

Investing in enhancing knowledge management and delivery is easily justified because the inefficiency and related costs of the status quo are significant and threaten the competitiveness of the business. Technical support and field service managers consistently describe the problems and real costs they experience when relying on a traditional knowledge management environment that simply aggregates large volumes of technical data and makes it accessible through search tools only. They include:

- Overstaffing of first- and second- line support due to low-productivity and excess time-to-resolution
- Overdeployment of field engineers to customer sites due to an inability to remotely diagnose non-critical cases
- Overstocking of replacement parts because of an inability to quickly or correctly identify and isolate failures
- Inefficient use of third-level support and development resources supporting lower-level issues
- Departure of senior technical staff and a loss of their knowledge because they are overworked supporting the first-line requests and never seem to progress their own role within the organization
- Loss of tribal knowledge because of difficulty in effectively capturing and sharing expert knowledge
- Inability to leverage investment in technical writers and trainers through actual sharing of expert knowledge
- Excessive removal of staff from front-line support to attend training events or extensive employee shadowing with limited return on investment

Of course, these clear inefficiencies have a larger and much more serious consequence: they translate into customer dissatisfaction, which has the potential to threaten the business as a whole.



EXPERT SYSTEMS SOLVE THE KNOWLEDGE DELIVERY CHALLENGE

Fortunately, while the task of moving beyond knowledge aggregation to address knowledge delivery may seem daunting, expert system technology optimized for technical support and field service applications provides a powerful solution. Adopting this new technology is non-disruptive and builds on and leverages prior infrastructure investments, including knowledge management, training and learning management, and the logistics infrastructure that controls technical support and field service workflow. Expert decision support can be viewed as an automation layer that sits between sources of knowledge – whether a knowledge base or a staff resource – and the people who need to deliver the knowledge. In fact, the expert system can even provide a means, where desirable, to allow customers to access these same knowledge sources directly, because the presence of an expert system ensures that knowledge is handled in an optimal and standardized manner. Unlike search, the expert system does not simply present a list of possibly relevant paths to a range of outcomes. It precisely structures the investigation and gathering of facts for diagnosis and then predicts the most likely solution and paths to that solution based on answers to the most relevant questions. As users access the system it constantly gathers feedback to improve the speed and accuracy of its results. The system can also operate in multiple modes ranging between fully deterministic, in which a specific sequence of questions and answers leads to a particular solution, and dynamic, in which the system displays a range of possible outcomes with predicted relevance that changes dynamically in response to new information.

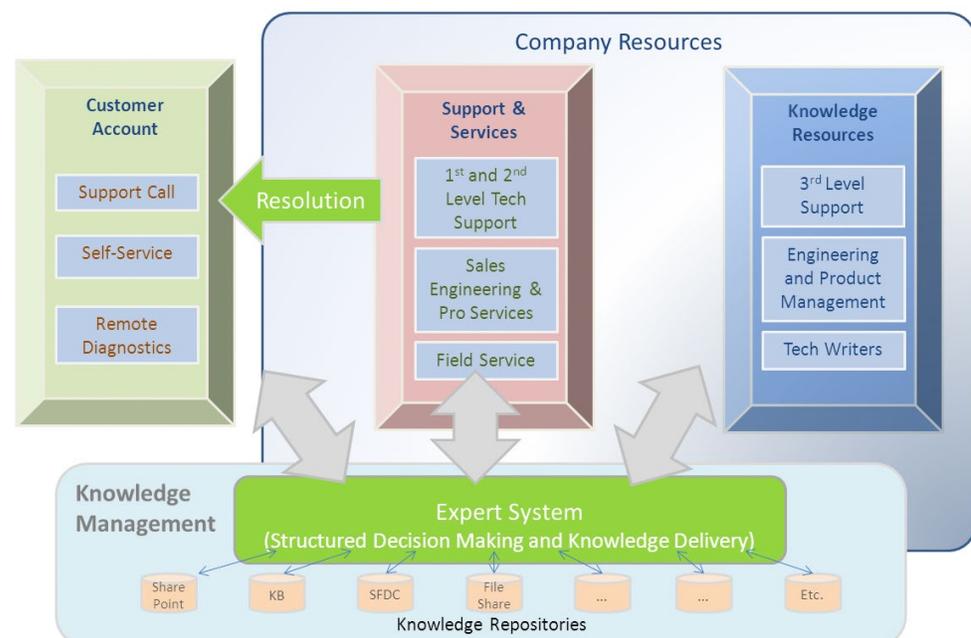
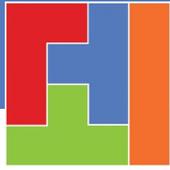


Figure 1: Expert Automation Fills the Gap

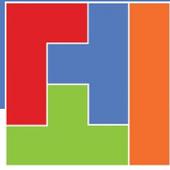


AUTOMATED KNOWLEDGE DELIVERY VERSUS TECHNICAL SUPPORT PROSE

Having an expert system enables organizations to go beyond the current approach of capturing expertise in the form of a prose essay (think “Tech Notes” and FAQs) to actually capturing the step-by-step sequence of questioning that results in the optimal decision path. Support Reps and Field Engineers can rapidly identify and ask the most important questions and they will quickly start to see a tightly focused range of problems that are the most likely to be the root cause. As the expert system guides their workflow, representatives can continue to leverage all other resources. The expert system is integrated into the CRM and Asset Manager, automatically incorporating background data into the system and sending results and statistics back into those systems upon successful case resolution. It also integrates with pre-existing knowledge sources; for example, displaying relevant sections of a user manual or a specific technical note. In other words, deploying an expert system has the potential to greatly enhance the value of pre-existing infrastructure, yet does not negate the value already realized with the status quo.

Deploying an expert system has the potential to greatly enhance the value of pre-existing infrastructure.

While the expert system accesses current information sources, it also has the potential to greatly improve how knowledge is documented and shared. With the expert system in place, technical staff, technical writers, and even lower-level support reps can directly model their proven procedures into the system. Many find this alternative significantly easier than attempting to document procedures using traditional prose methods and the results are more powerful, as they walk a user through performing the procedure rather than requiring them to read and correctly interpret each action. Expert decision systems often offer great potential to revive the value of the content provided by the technical writer in a world where few have the time or inclination to read lengthy documents.

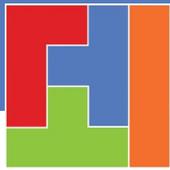


AN EVERYDAY EXAMPLE OF WHY EXPERT SYSTEMS

Possibly the easiest way to visualize the relevance and value of an expert system is through an analogy. Imagine it is April 14th and you suddenly realize that you have one day to fill in and file all of your relevant tax forms. The information you need to do this correctly is very well documented in a collection of massive books called the US Tax Code, which happens to be available to the public on the internet. Would you be comfortable using Google to search this information and the massive shared set of knowledge from other taxpayers available on blogs to select the proper strategy, file correctly, and meet your deadline? Your answer would probably be “no” once you realize that there are a number of widely used, purpose-built expert systems, such as TurboTax®, that have already optimally structured how to gather data, determine the ideal filing strategy, and complete the step-by-step process of filling out the required forms. These systems are even more appealing when you realize that you can publish and even electronically file and pay as part of the process. Now, imagine a similar level of automation and ease-of-use for diagnosing and resolving the incidents that arise with your products and services. Seen in this light, the benefits of an expert system should be obvious.

PRESENTING THE LOGICNETS EXPERT DECISION SUPPORT PLATFORM

LogicNets is an Expert Decision-Support Automation software platform that can be deployed either as a web-based service or as an on-premise, user-managed system. It is a strategic platform that allows staff at all levels to participate in the process of capturing and sharing expert knowledge and best practices. It integrates easily with existing infrastructure and can be accessed from within structured workflow environments, such as the CRM system. LogicNets can import data from external systems, such as the CRM, asset management, or PBX phone systems, and it can direct data output of all sorts back into these systems. It can even interact remotely with equipment or systems that are the subject of the support process. At its core, the system automates and structures diagnostic workflow guiding non-expert staff, or even customers, accurately through the proper series of diagnostic steps to issue resolution actions. As the system takes users through the decision-making process, it can connect dynamically to specific locations in additional relevant resources, such as user manuals or FAQs. It can work in deterministic or dynamic roles, predicting diagnostic outcomes and automating the user’s navigation of problem resolution through potentially complex scenarios with multiple outcomes. LogicNets does all of this as a web-based



service that allows users from a wide range of roles in your organization to access the system and its shared pool of structured knowledge.

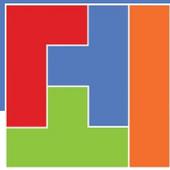
EXPERT KNOWLEDGE DELIVERED IN YOUR ORGANIZATION'S IMAGE

As organizations consider adopting expert system technology, they often wonder if the format will be overly technical or difficult for low-level reps to interact with unless they invest significantly in design and formatting resources. LogicNets provides the analytical power of expert decision technology through a web-browser format that makes it easy to match the look and feel of the system with usage case requirements and the abilities and preferences of the actual users. It is easy to match and reinforce an organization's branding and user interface standards and customs. As the examples below illustrate, LogicNets users have produced a wide range of formats, presenting the technology in their own branding and content standards.

Not only is the branding and messaging capability important to internal workflow, but it is also a very powerful indicator of the organization's commitment to quality of service if customers see the system.



Figure 2: Expert Systems with Your Look and Feel



VISUAL DESIGN THE KEY TO EASE-OF-USE AND EFFICIENCY

Behind the scenes, LogicNets makes the critical process of capturing expert knowledge extremely easy. We believe that one reason that expert system technology has been slow to be adopted is that it has traditionally been presented as a programming language. The LogicNets model makes capturing expert knowledge a visual process, one that uses the proven visual format of workflow design. Engineers prefer workflow and process design formats and LogicNets' Designer interface allows designers to create visual logic networks (or "logicnets") by dragging and dropping elements on the screen and double-clicking on them to set and edit parameters in a WYSIWYG editor. As a designer constructs a flow of logic, he can quickly test it without code compilation of any kind and quickly see his application as the user will see it. LogicNets allows organizations to minimize the potential complexity of troubleshooting and resolution through a standardized and repeatable set of design conventions. The result is a system that is significantly faster and easier to use than the traditional alternatives.

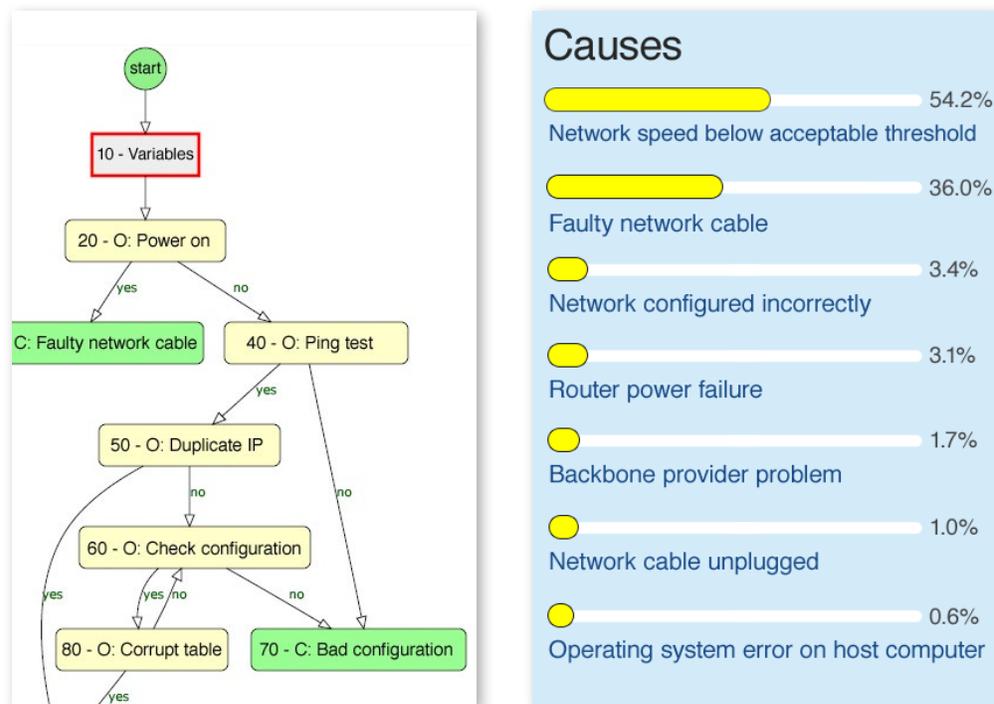
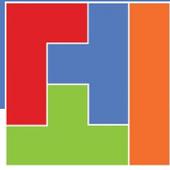


Figure 3: LogicNets Workflow-Based Designer



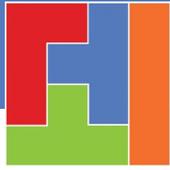
INSTANT DELIVERY AND COLLABORATIVE FEEDBACK

The instant the designer has created and tested a LogicNets-based application he can publish it and make it available to users. This is the essential value proposition of automated expert decision support technology—capturing knowledge and making it sharable with a minimum of intervening processes and costs. Once the new system is in the field, it is also easy for users to provide feedback to the designer at any point in the application sequence. Feedback can highlight issues the user experienced and provides a platform for the user to suggest alternative solutions. As a result, many organizations deploy LogicNets quickly, leveraging the knowledge of the organization as a whole to refine and perfect the newly captured procedures. In addition to user-provided feedback, the system also benefits from heuristic learning to drive predictive diagnostics. Designers can introduce a new LogicNets-based application that contains an initial estimate of the weight and probability of a particular set of outcomes. As users interact with the application, the system retains and constantly recalibrates these weights and probabilities based on actual results. This means that the system gets progressively more accurate over time. It also means that an application can be launched successfully even if the true causes are not fully understood at the time of development.

LOGICNETS MODULAR ARCHITECTURE

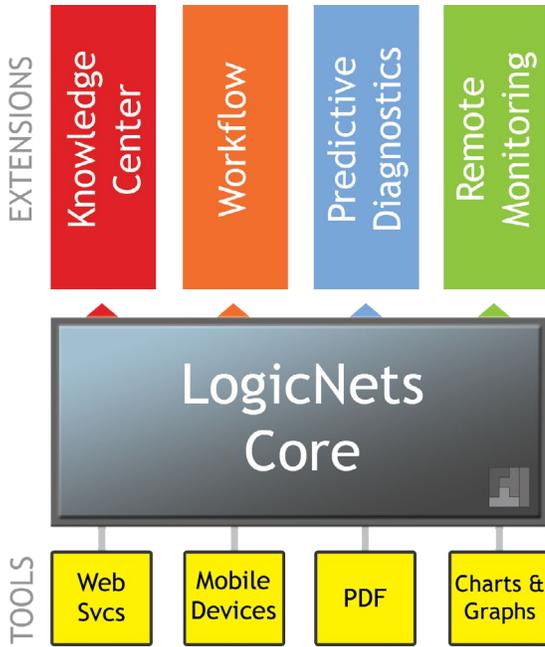
The LogicNets architecture is modular so that users can invest in the specific functionality they need and trim their costs appropriately. At LogicNets' core is a powerful decision engine that lets you create, share, and manage web-based applications that contain your decision-making expertise. It provides three main areas of functionality:

- **The Designer** – Lets you use LogicNets to build your own applications from scratch, or take one of the pre-packaged applications provided with the system, use it as-is, or customize it to your specific needs. Either way, no coding is required to create powerful, expertise-driven applications.
- **The Publisher** – Lets you test your application before you go live; gather and incorporate feedback; and, when you are ready, publish your system to the web for your customers, your staff, or the whole world.
- **Manager** – Lets you monitor the performance of your published applications and optimize them as needed. You can analyze how users interact with your application, track the path they take through a process, and monitor their overall performance.



LOGICNETS EXTENSIONS

LogicNets also has available a group of targeted functional extensions to the LogicNets core.

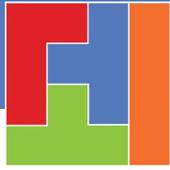


The **Knowledge Center** allows organizations to manage existing resources (such as tech notes and support documentation) within the expert system and provides a range of functions that you can customize to suit your organization's needs, including content management, search and navigation, user access and permissions management, and interactive user feedback.

The **Workflow Manager** allows users to incorporate diagnostics procedures within an automated workflow framework. It is often used as an alternative to external components such as the CRM or ERP system. The Workflow Manager combines a powerful task scheduler with automation and management engines so that applications can be fully automated and, if needed, function as a standalone environment.

The **Predictive Diagnostics extension** allows organizations to assign weights and probabilities to outcomes and diagnostic paths to enable case-based probability, advanced cause determination, and adaptive dynamic recalibration.

The **Remote Monitoring extension** automates the connection to and collection of data from remote sources, allowing the systems and equipment being supported to directly report status and provide diagnostics information. This powerful feature allows organizations to offer proactive maintenance and self-healing procedures without human intervention. In many instances, this extension can be offered by the organization, thus generating revenue.



LOGICNETS TOOLS

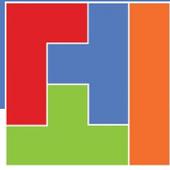
LogicNets also offers additional utilities that can be integrated into LogicNets-based applications:

Web Services – Remotely and automatically interact with other infrastructure components, including SharePoint, Salesforce.Com, or Oracle On Demand.

Mobile Device Support – LogicNets applications for iPhone, iPad, and Android devices not only make it easy to access the system remotely but also enable powerful remote functions thanks to support of all mobile device capabilities, including GPS, camera, and barcode and QR scanners.

PDF Generator – Provide users the ability to create and print documentation with customized layout and format details from within an application.

Advanced Charts and Graphics – Display complex statistics in graphical formats, which are particularly useful for management and system administration and can provide clearly displayed system and usage reports. Generate detailed charts using real-time data.



SUMMARY: LOGICNETS DELIVERS A STRATEGIC ADVANTAGE

Improvement in the quality of your support and service has a profoundly positive effect on how customers compare you to your competition and the most critical benefit of making expert knowledge quickly accessible is the marked increase in the speed and accuracy of issue resolution that results in long-term customer satisfaction. This benefit alone recommends the selection of LogicNets. In addition, however, LogicNets helps your organization meet broader strategic internal objectives for ensuring significant gains in efficiency and reductions in costs. These are the type of improvements that companies seek and track at the executive management level and they include:

- Systematic capture and retention of expert and institutional knowledge
- Effective and structured knowledge sharing
- Improved expert staff job satisfaction and retention
- Maximized strategic infrastructure investments in CRM, ASM, ERP, and other systems

LogicNets and the use of Expert Decision-Support Automation offer clear benefits for technical support and field service organizations in virtually all industries. While the tactical results easily justify the deployment of an expert system with a clear return on investment on a project-by-project basis, the strategic value is critical.

Unlike investments to your logistical infrastructure, the improvements in knowledge delivery are not simply about improving the plumbing - those capabilities that your customers assume you have and that are not particularly tangible to the customer. Improvement in knowledge delivery is prominently visible to your customers and your organization's ability to access and deliver better information to your customer about your products and services greatly increases the esteem in which they hold you and their willingness to continue and expand their investment. It can allow your organization to use superior support and service as a differentiator from the competition and can provide a critical competitive advantage.

For additional information about LogicNets and Expert Decision Support Automation, please contact LogicNets at sales@logicnets.com
