

AN INTRANET TECHNICAL WHITE PAPER

Improving Information Management in the Call Center

Delivering contextual information to agents for enhanced customer service



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Executive Summary

Because today's contact centers are one of, if not *the*, key customer interaction channels, they need to support customer satisfaction, cost reductions, and cross-sell/up-sell efforts. To achieve these goals, contact center agents must be able to maximize the wealth of customer, product, and service information at their disposal. To do that, however, means that agents must have easy, fast access to relevant, up-to-date information. Better yet, they should be guided through all necessary steps, in a process known as the milestone-driven call, to ensure the customer interaction is maximized.

Traditional content access solutions, such as intranets and knowledge management applications, fail to address the key business processes that support the entire information lifecycle – from content creation to contextual delivery to analyzing and improving content effectiveness. IT departments ambitiously try to address these issues by building additional capabilities on top of these content management products, while ensuring necessary integration with existing call center technologies, such as Interactive Voice Response (IVR), Computer Telephony Integration (CTI), and Customer Relationship Management (CRM) applications. However, they often find themselves with an increasingly complex architecture that is difficult, time-consuming, and costly to manage. Most importantly, they discover that these homegrown solutions do not address the complex business processes tied to the entire information lifecycle.

This white paper describes InStranet's Contact Centers In-Line™ (CCIL), a complete, fully integrated knowledge base solution that meets all of these business requirements. It is designed to be a real-time content creation and delivery medium for call center agents, with deep integration into existing business architectures, databases, and infrastructure. With CCIL, organizations can maximize the effectiveness of their contact center agents by delivering contextual, timely information, collecting feedback directly from agents, and improving content to maximize its effectiveness in ensuring customer satisfaction and growing revenues. CCIL belongs to InStranet's eKnowledge services suite of applications that enable organizations to handle all types of interactions, including customer self-service and sales channel communications.

The paper also describes InStranet's unique Content Application Foundation™ (CAF), on which CCIL is built, and which provides InStranet with a unique advantage in the call center knowledge base market. CAF is a complete set of integrated Java Engines that 1) covers all aspects of the information lifecycle in a content-based application, and 2) manages/administrates all objects and concepts moving through the application. CAF is built around one set of common visual metadata that relies solely on a unique, patent-pending multidimensional model. The multidimensional repository houses all the business rules for categorizing, securing, syndicating, and analyzing the metadata and subsequent content, and all the content in it is tagged for faster navigation on large volumes.

Finally the paper presents the features of InStranet's technical architecture, designed and built using the latest technologies and industry standards to provide maximum flexibility and interoperability with existing architectures. The

three-tier architecture is comprised of a relational database that stores the data and workflow definitions; a Java application server layer that extracts and transforms data; and a Web server and client layer that delivers information and displays it via intuitive, user-friendly interfaces.

Together, these capabilities form a comprehensive, easy-to-deploy contact center solution that helps organizations maximize the value of their customer interactions.

Improving Information Management in the Call Center

Contact centers are rapidly becoming the face of many organizations, serving as the largest single channel through which most organizations communicate with their customers.¹ Because of the wide range of issues handled by today's contact centers (from billing to selling new products and services to supporting the customer's use of those products and services), contact center agents must address more complex customer questions and issues than ever before. At the same time, businesses need agents to answer more calls with less people, increase quality of service, reduce average call times, increase up-selling and cross-selling, and improve first call resolution rates. The absence of first call resolution alone has been found to account for a minimum of 30% of a call center's operational cost.²

Savvy companies realize that retaining existing customers is more cost effective than acquiring a new customer – it costs three to five times more to acquire a new customer.³ Clearly, maximizing relationships with existing customers is the most cost-effective way to grow revenues. In fact, customer service and support (CSS) has a 10 to 25 percent greater impact on customer loyalty and revenue than sales or marketing initiatives.⁴ To achieve higher levels of customer service excellence, the customer service and support department must step up to the challenge that service is emerging as an enterprise goal.⁵ At the same time, call center agents must be well equipped to meet and exceed customer needs.

However, these goals are simply unachievable if agents do not have fast access to the right information. Contact center agents must demonstrate an understanding of customers based on an accurate customer profile created from information gathered from a variety of applications and databases dispersed throughout the enterprise. At the same time, agents must understand what promotions and offers are most likely to appeal to the customer, and what procedures are relevant to the customer's issue. Unfortunately, in most cases, agents are not able to access the necessary information in a timely manner. This is not surprising; even though maintaining or improving customer satisfaction and service levels is the primary objective of most call center executives, these same executives find it difficult to achieve these goals.⁶

Information access and content management issues

Agents receive countless updates, policies and procedures, and internal communications – loads of unstructured content from marketing, sales, product development, and other content developers. But in most cases, they have not been equipped with tools to manage this information for optimal efficiency. In fact, the majority of data dispersed across companies is in an unstructured format, such as within files, images, reports, and email messages. While companies have taken steps to integrate the structured data (i.e., contact information, transaction histories, inventory, etc.), they are often at a loss when it comes to providing a unified view and access to their unstructured data. Yet without this information readily accessible, contact center agents can only serve customers based on an extremely narrow view of the customer's preferences and history.

While various methods and tools (e.g., intranets and knowledge management applications) are used to provide agents with access to relevant customer and marketing-related data, none to date have succeeded at providing the information in a way that optimizes the agent's interaction with the customer. Too much time is spent searching for relevant data and not enough time is spent describing pertinent offers.

To complicate matters, corporate information is almost never fully centralized and integrated, particularly customer information contained in customer relationship management (CRM) and other applications. And it's rare to find a contact center agent with unified access to this wealth of information. As a result, customers get frustrated as agents explain that, "I don't have access to that information from this location. I'll need to transfer you to another agent." Just as readily, contact center agents are frustrated by their inability to provide the right information to their customers. In fact, the average consumer must contact a company 2.3 times before their problem is remedied, negatively impacting their future intent to do business with the company.⁷

While agents are struggling with information access issues, contact center managers and content creators (from marketing, sales, product development, etc.) are challenged with understanding how well agents understand the content provided and where improvements are needed. Content creators lack the tools to ensure that information resources available to agents are up-to-date, effective, reviewed, and used properly. At the same time, contact center managers and team leaders lack the tools they need to coach, monitor, and communicate with agents in a timely, efficient way. Yet continuously measuring agents' knowledge about available materials, scripts, new promotions, and other supporting information is necessary to ensure processes are optimized to improve agent efficiency and customer service.

Today's "solutions" don't solve the problem

Most companies rely on email, paper, and intranets to "enable" their agents – but these methods are terribly ineffective. They distribute information, but do not address the underlying business process problems that prevent agents from quickly finding the correct information.

Intranets complicate content access

It's not uncommon for every functional unit in a company to have its own intranet (marketing, sales, product development, etc.), so call center agents are forced to try to find information – in real time with customers on the phone – on multiple corporate intranets, all of which are organized differently. Inconsistent information structures and the lack of information centralization make it extremely difficult for agents to quickly find what they need. Even if the content is current – which is highly unlikely in many cases – intranets do not make it easy for agents to search for information in a fast, efficient, contextual manner. The problem can be so debilitating that call centers will often pull the most-used pages from these various intranets and create their *own* intranet!

Seeking the answer in knowledge management applications

Many companies recognize that intranets alone do not solve the underlying process issues impairing agent productivity and effectiveness, and turn to knowledge management (KM) applications. While KM applications are comprised of a number of technologies linked to business processes, they contain limited functionality relative to the needs of today's call centers agents. KM tools mainly provide frequently asked questions (FAQ) publishing/search capabilities. Answers to questions are kept in a database, and agents search to find answers to the most relevant questions for a particular caller and then use a decision tree for problem solving.

While this simple format works well for call centers that function as typical help desks, it is inadequate in contact centers that handle very complex customer issues. Increasingly, contact centers need to adopt milestone-driven call processes that guide agents through calls quickly and efficiently. For instance, once they've solved the customer's issue, it may be appropriate for agents to offer either a promotional or a retention incentive. To optimize agent performance, the contact center solution should proactively present the appropriate offer and related script, etc. to the agent based on the customer's history and issue at the time of the call. Yet KM applications do not provide a simple way for agents to determine what promotions are running, or what retention incentive can be offered to the particular customer. In fact, 60% of call centers do not practice up-selling/cross-selling, and not having the appropriate call center solution in place may be part of the problem.⁸ While KM applications have evolved, their functionality only addresses a narrow piece of the puzzle for most call center agents.

In addition to enabling all "basic" services of a contact center (e.g., search and FAQs), the ultimate knowledge-based application needs to provide the following capabilities that help solve specific content-related and business process issues:

- Optimum performance under heavy loads, so each agent has rapid access to all necessary information to ensure a smooth interaction.
- An interface and tools that support the "milestone-driven call," to ensure agents do not miss additional revenue and customer satisfaction opportunities.
- Tools and processes to maintain a consistent and up-to date knowledge base over time.
- Easy-to-use administration tools that minimize the resources involved and the knowledge needed.
- Simple and quick integration with call center applications (e.g., CRM, CTI, IVR, billing, quality management, etc.) so existing call center technology investments are maximized.

What is needed is a solution that augments search capabilities with proactive presentation of contextually-relevant information, and provides management tools that enable the evaluation of the content value as well as the performance of those using the content (i.e., contact center agents).

Contact Centers In-Line™: A Complete, Integrated Solution

Contact Centers In-Line (CCIL) is the only complete, fully integrated knowledge base solution available that meets all of these business requirements. It is designed to be a real-time content creation and delivery medium for call center agents, with deep integration into existing business architectures, databases, and infrastructure.

CCIL centralizes and integrates enterprise-wide content for agents and makes it easy for them to find what they need, when they need it. This allows agents to instantly access and leverage the wealth of information contained in the variety of enterprise knowledge repositories. The solution integrates directly into existing, integral business processes in the call center and the technologies that support them, including telephony systems and CRM applications. As a result, agents are presented with the answers before they're asked any questions – appropriate, customer-specific content is automatically displayed based on the call context determined by the IVR and CTI applications.

As a complete solution, CCIL supports the following business-critical processes for call centers:

- *Integration of documents into the knowledge base:* Contact Centers In-Line handles all types of content, in any format or from any source, in a single database. It provides a set of content management technologies to simply and quickly aggregate information from multiple existing sources such as file systems, databases, and email systems in an automated and scheduled basis into one central secured system.
- *Distributing documents to contact centers:* The Contact Centers In-Line publishing module supports the complete publishing process and automatically distributes the appropriate content to the correct agent. For instance, it delivers content to all specified contact centers, to all agents with a certain skill level, or to all agents accepting calls from certain types of customers, etc.
- *Resolving customer problems:* Each contact center agent has a personalized view to access the information within the knowledge base. A series of specific tools are provided to search and organize information according to each person's needs.
- *Proposing a pertinent sales offer:* CCIL can be integrated with CRM applications to provide all necessary content about sales pitches, detailed descriptions, FAQs, etc. It also complements CRM installations by managing each discrete aspect of a call. For example, for a promotion, it guides agents through the offer presentation. Whether the last milestone in a call is an up-sell or retention offer, CCIL can offer the most appropriate content in real time. For organizations without CRM tools, CCIL helps with the segmentation and selection of the appropriate proposal.
- *Analyzing the effectiveness of the information:* Managers can measure how often documents (and personalized views) are viewed and which documents agents have recommended, according to contact center agent profiles. This information can be used to improve the quality of the information provided to agents. Managers can also determine which agents have (and have not) reviewed certain content, helping them ensure field readiness.
- *Updating and maintaining information:* Insuring knowledge base consistency is the foundation of any quality customer service. This objective can only be

achieved through specialized tools and interfaces. CCIL manages all aspects of the information lifecycle from initiation to end-of-life and archiving, and helps organizations continuously improve content quality.

The importance of integration

Many companies ambitiously undertake the development of the various applications and interfaces required to support their contact centers, thinking it will save them time and money. What they fail to take into consideration is the impossibility of quickly architecting such a complex solution that integrates so many moving parts. Furthermore, administering those different capabilities requires on-going management that is difficult and time consuming when handled through multiple interfaces. Any required updates are complex and costly to implement, as thorough testing is required to ensure all interrelated components operate smoothly. Finally, and most importantly, the majority of these homegrown solutions fail to meet the ultimate objective of presenting contact center agents with the right information in a timely manner, while also providing integrated, easy-to-use tools for the other divisions within the organization that must create content and support and manage agents.

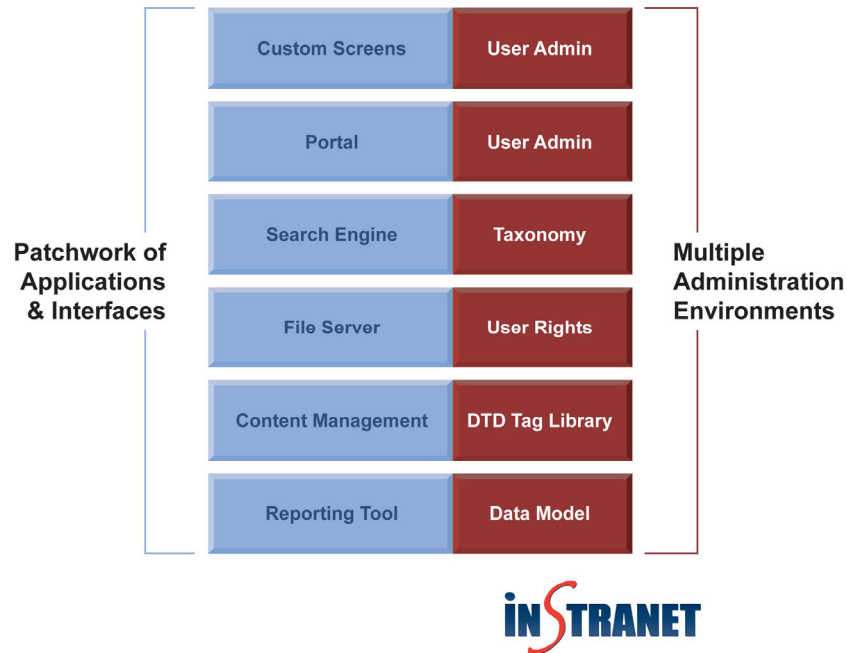


Figure 1. Custom solutions are complex to build and maintain and never result in the same level of integration as CCIL

At the same time, many organizations mistakenly view content management as the key process in equipping their contact center agents. In reality, content management is only the process of producing content in a controlled repository, and is just one of many engines required for a Content-Based Application (see Figure 2).

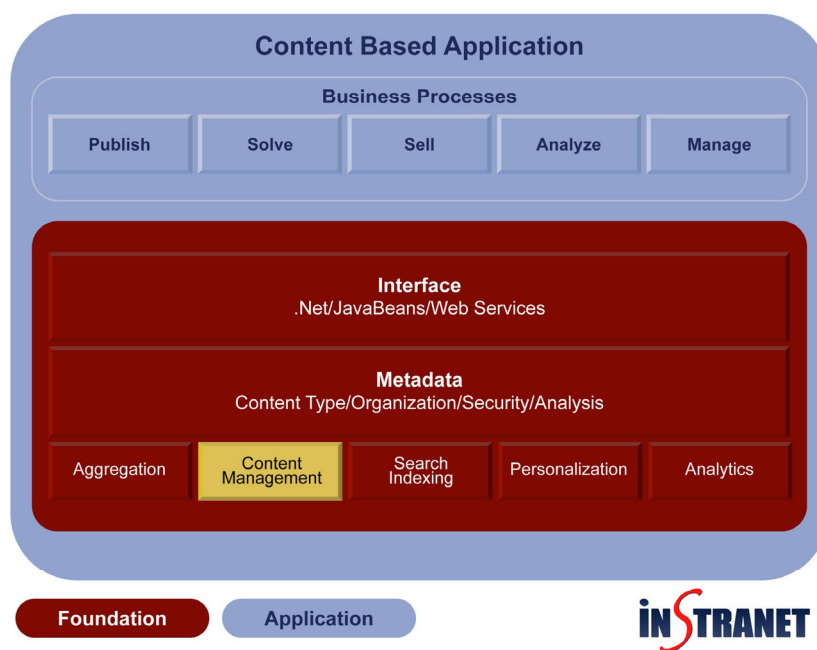


Figure 2. Content Management is one of many engines in a Content-Based Application

Contact Centers In-Line: functional architecture

CCIL is an out-of-the-box, content-based application that embeds multiple technologies to serve today's content-driven contact center business processes. The solution is built on InStranet's CAF (Content Application Foundation), a complete set of integrated Java Engines that 1) covers all aspects of the information lifecycle in a content-based application, and 2) manages/administrates all objects and concepts moving through the application. CAF is built around one set of common visual metadata designed to be open, intuitive, and scalable. The metadata reflects changes in a descriptive way, so IT teams are not forced to rewrite code every time there is new product line or a new organization to integrate. It also facilitates the evolution of the application itself as new types or formats of content are introduced over time.

The metadata relies solely on a unique, patent-pending multidimensional model. All the content in this multidimensional model (or cube) is tagged for faster navigation on large volumes. The multidimensional repository houses all the business rules for categorizing, securing, syndicating, and analyzing the metadata and subsequent content. Users are granted rights to appropriate slices of the cube based on their profiles.



Figure 3. Sample multi- dimensional knowledge base structure

As opposed to most content-related technologies that were designed to support ecommerce Web sites, CAF was built with enterprise applications in mind from day one. This focus led to a major innovation in terms of keeping all the moving parts synchronized a critical requirement to ensure that enterprise applications can share their information (e.g., call reasons, product hierarchy, customer segmentation, agent profiles, document types, etc).

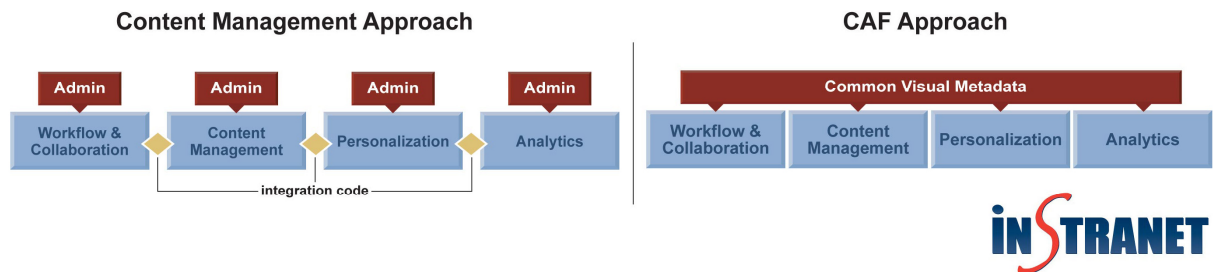


Figure 4. Common visual metadata ensures all Content-Based Application engines can easily communicate

For instance, in Figure 4, the traditional Content Management Approach requires multiple administration interfaces and complex integration code between the various engines (e.g., analytics and personalization). Adding new applications adds another layer of complexity to an already complex environment. With InStranet’s CAF, there is one common set of metadata and a single point of administration. This greatly simplifies administration and programming to ensure smooth interaction between the various engines in a Content-Based Application. Because InStranet applications, such as CCIL, are metadata-driven and not code driven, all the business rules of the application can be exchanged from other existing systems simply by exchanging a list of data.

This out-of-the-box solution saves the cost of buying a patchwork of tools and products, smoothes integration between technical infrastructure and the various

components that enable the contact center, and means that administration for all components can be accomplished through a single interface.

Integrated, comprehensive end user functions

The functional components of the CCIL application are a series of modules, or “desks,” that run on top of the Content Application Foundation. This modular design enables organizations to seamlessly manage each of the steps in the contact center information lifecycle (see Figure 5). Users may be granted access to several modules, one module, and even one menu of a module.



Figure 5. CCIL is an integrated solution designed to enable contact centers to manage the complete product and service information lifecycle

Agent Desk

The *Agent Desk* enables contact center agents to organize and find up-to-date information in real time and receive pre-filtered information appropriate for each caller. For instance, by integrating with IVR systems, when a customer calls and presses a number associated with a certain product, the appropriate agent sees all relevant documents related to the product before even answering the call.

The *Agent Desk* features four key advantages over other help desk and contact center solutions:

- Allows agents and managers to organize information to suit their unique needs
- Integrates with existing call center technology to deliver pre-filtered, contextual information before customer interaction begins

- Guides agents through milestone-driven call via EASE (Enhanced Agent Solving Experience)
- Enables content awareness tracking and effectiveness feedback

The *Agent Desk* module is built around the following six key contact center agent processes or features:

- Personalization
- Field readiness management
- Training
- Solving
- Up-selling and cross-selling
- Feedback management

Personalization: This feature automatically collects and displays all the documents concerning a given context. For example, an agent dedicated to answering technical questions might only be shown product FAQs, release notes, and other relevant documents. An agent serving only California-based customers will only be shown promotions and relevant policies and procedures specific to California.

At the same time, agents can tailor their desktop view to best suit their needs and match their working context. For instance, they can ensure easy access to the documents they most frequently use. If an organization would prefer not to allow agents to control the desktop, managers can create a working context on the agent's behalf.

In contrast, intranets, homegrown solutions, and other knowledge management tools force contact center agents to use a non-customizable interface – agents have little or no choice over the priority of information presentation, and are bound by rigid search parameters. These solutions often provide *too many* search results, so that agents must scroll through pages to find the pertinent information.

Field readiness management: Through the *Publisher Desk*, relevant content is proactively pushed to agents. Agents are alerted when new documents and content has been added and when an existing document or content has been modified. The field readiness management feature ensures agents have reviewed all materials and information. It also feeds pertinent information to the *Administrator Desk*, such as which agents have not reviewed certain information. With other solutions, understanding who has reviewed what information often requires a manual process of surveying contact center agents.

Solving: CCIL makes it easy for agents to find the most frequently used information, presented in ways that best suit their needs. For instance, agents can access the pages most frequently searched by other agents with similar profiles, or can view the most frequently used documents across all contact center agents. Other solutions can typically only present content in the way and order in which it was originally published, and lack the ability to automatically reorder information based on popularity or effectiveness.

The *Agent Desk* incorporates a guide, referred to as EASE (Enhanced Agent Solving Experience), to assist agents through each step of a milestone-driven call.

This feature is especially useful for organizations that feel scripts are too stringent and difficult to administrate, but that want to provide their agents with text appropriate for different calls (e.g., up-sell, resolution, retention). By guiding the agent through all requisite steps, EASE ensures that agents meet all call milestones.

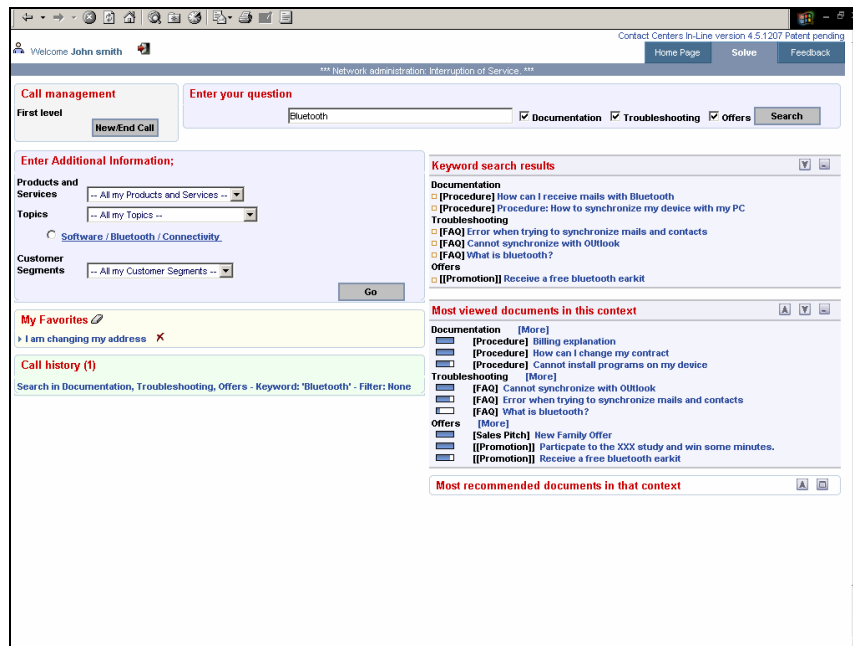


Figure 6. EASE guides agents through the milestone-driven call

Up-sell/cross-sell: CCIL proactively recommends up-sells and cross-sells based on the customer's profile and specifics of the current call. It not only presents the appropriate offer, but also provides the agent with all necessary supporting documentation and information (e.g., scripts, product documentation, etc.) to effectively propose the offer. CCIL will also recommend retention offers when appropriate. Intranets, knowledge management applications, and homegrown solutions can usually only show what the agent requests.

Feedback management: Agents are the people most aware of the effectiveness of the information they use. When a document prompts a remark, the agent can send comments to its author. This allows agents to collaborate with content creators to increase the quality of the knowledge base content. Providing feedback through a single interface is not typically feasible with other solutions.

Publisher Desk

The CCIL *Publisher Desk* provides a complete set of tools and views for managers, enabling various content providers to create editorial teams, manage tasks for each member of the team, and control the synchronization of the content creation for all project information.

The *Publisher Desk* features four key advantages over other help desk and contact center solutions:

- Easy to use and intuitive
- Allows content providers to fully control publishing process through a single interface
- Helps content creators prepare, approve, publish, and ensure currency of information
- Centralizes information and documents for easy access by agents

The *Publisher Desk* module is built around four key content creator processes or features and associated sub-components:

- Document structure
- Content control
- Authoring
- Collaborative work

Document structure: At the base level, the *Publisher Desk* allows content providers and team leaders to define document structures. For instance, they can define template descriptions for specific collateral types, such as datasheets. A template guideline ensures that agents are presented information consistently. Once agents are familiar with a certain organization of information, they can more readily and quickly navigate a document and find the information they need.

Content control: This component includes a number of sub-components that allow publishers to control content in the knowledge base so that data is always current.

- **Content Expiration:** Organizations often struggle with ensuring an up-to-date and consistent knowledge base, as intranets and other knowledge management tools don't provide a means to identify and purge outdated content. With the Content Expiration feature, publishers can set expiration dates to ensure outdated information and documents are automatically removed.
- **Online Simulation:** Publishers can simulate how a document will appear to an agent, similar to the "print preview" option in word processing tools.
- **Schedule View:** This calendar not only provides valuable insight into upcoming promotions for contact center agents and managers, it also provides a simple mechanism for marketing and sales managers to keep relevant employees apprised of upcoming promotions. Publishers can also use this tool to see at-a-glance the status of all documents (e.g., what is going live soon, what expires soon, etc).
- **Notification:** This tool allows publishers to schedule automatic alerts to remind content owners to verify and review content. It also tracks who has and has not verified and reviewed documents, so publishers can follow up as necessary.

Authoring: When creating content for intranets or other knowledge management environments, authors generally struggle to create content for different audiences, must work with tools in a variety of environments, and then rely on a Webmaster or the IT department to push the content live. The authoring component of the *Publisher Desk* eases the actual content creation and publishing process through two integrated tools.

- **Office Integration:** CCIL allows content creators to save their documents directly from a standard office publishing tool, such as Microsoft Word, into the knowledge base.

- **Form Editor:** The form editor allows organizations to send simple messages/ live communications (e.g., alerts, headlines, reminders) of less than 100 characters through the *Publisher Desk*. This can be useful for sending instant messages about significant events that will impact contact center agents. For instance, “The west coast network is down, so all calls will be routed to the east coast,” or a wireless phone service provider might send a message saying “Cells in the following areas are down,” providing agents with insight into potential customer issues. Sending messages to contact center agents through this tool means agents don’t need to check a different application (e.g., email, LCD screens, etc.) or read paper notes to receive important messages.

Collaborative work: The *Publisher Desk* module lets organizations manage the documentation process as a project; project managers can assign and manage specific publication tasks, project members can collaborate and apprise others of their status, etc. CCIL also provides tools that identify which existing documents need to be changed and determines the impact across the entire knowledge base.

- **Workflow:** Here publishers define the main steps in a content creation process and assign necessary tasks. For instance, for datasheets, the process may be to first create the content; second, validate the content; third, review the content; and fourth, publish the content. By clearly defining steps and assigning relevant tasks, all those involved in the content creation process can determine what needs to be done and who is responsible.
- **Task Assignment:** While the Workflow tool accommodates both high- and low-level project details, organizations may prefer to present project details separately from the workflow. The Task Assignment feature captures details at a granular level, so publishers can ensure no details are overlooked. This flexibility allows organizations to decide how and where to provide project details.
- **Editorial Project:** This virtual workspace enables group collaboration. Publishers can assign team members to specific projects; managers can easily organize and review the work being done and assign tasks as necessary; and project members can report their status. By centralizing project details and task assignments, and automatically tracking project and task status, this feature omits the need to use a variety of office tools, such as email, Microsoft Project, etc.
- **Shared Library:** The Shared Library provides a single repository for multimedia images, such as logos, to ensure branding and image consistency.
- **Notification:** This component handles any reminders about due dates, automatically notifying project members of the need to complete assigned tasks.

Analyzer Desk

The *Analyzer Desk* provides a centralized set of tools to help content providers assess the value of content and ensure agent awareness. Compared to homegrown, intranet, and other knowledge management solutions, the *Analyzer Desk* features three key advantages:

- Allows content providers to receive feedback and measure content effectiveness
- Helps measure agent readiness

- Enables survey management

This module is built around four key content creator processes or features:

- Content live indicators
- Drillable reports
- Surveys
- Feedback management

Content Live Indicators: These indicators track the percentage of users who need to review documents. It also lets managers see which documents are the most popular by contact center agent profile, helps them analyze how agents are searching the knowledge base, and provides insight into which documents are the most helpful in resolving customer issues. The most popular documents are automatically pushed to the *Agent Desk* to populate the *Solving* section.

Drillable Reports: This feature is similar to the Content Live Indicators feature, but it provides more detailed and sophisticated information. For example, managers can determine the percentage of agents who have read certain documents and then drill down to compare results across different agent types, for example, experienced versus newer agents. Reports can be exported into Excel for further analysis and distribution throughout the company.

Surveys: Any document published in Contact Centers In-Line can be linked to a survey intended for the agents viewing the document. This can be a satisfaction survey about the document content, an evaluation of the sales impact of a document, or a test of how well an agent understands a product, procedure, etc. The results of surveys can then be viewed using the *Analyzer Desk* module. Comments and surveys can be used to explain abnormal awareness ratios of certain documents. Managers can analyze the results of contact center agent surveys and “slice and dice” the data to gain additional insights. For instance, managers can compare training results of new agents to experienced ones, gold card team members against platinum card team members, etc.

Feedback management: This component captures the feedback entered into the *Agent Desk* feedback management tool. By reviewing centralized agent feedback, supporting teams throughout the organization can address issues that will help improve contact center agent productivity and effectiveness.

Administrator Desk

Administrators can define all contact center aspects (i.e., users, content, and processes) from this desk, instead of through a variety of interfaces dedicated to each function. They can classify and manage users and their roles/profiles (e.g., agent vs. manager) and determine what content in the knowledge base is accessible based on roles and profiles.

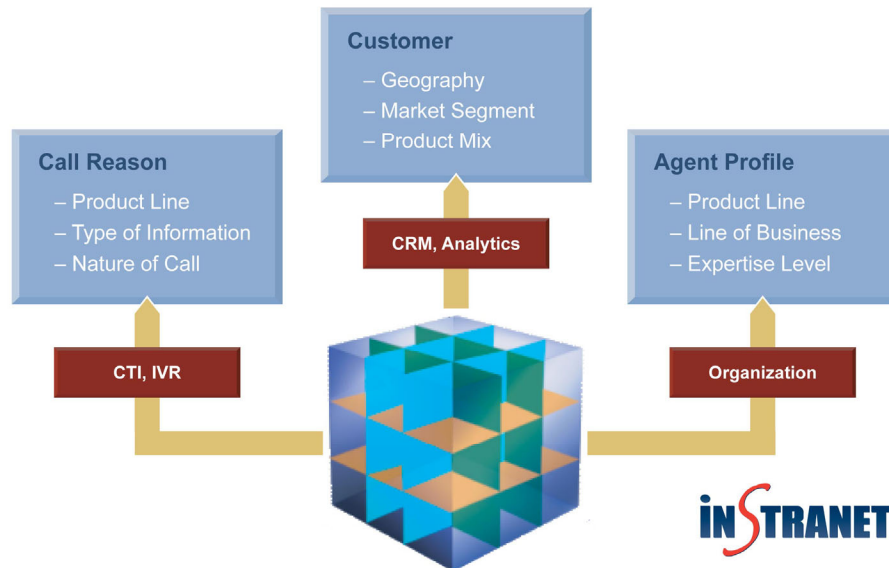


Figure 7. InStranet's integrated information model enables powerful and intuitive content organization

The *Administrator Desk* features three key advantages over homegrown, intranet, and other knowledge management solutions:

- One central point of administration for all desktops
- No programming required
- Integration with other administration tools

One central point of administration for all desktops

Because solutions developed in-house use different administration tools for each user "module" (e.g., agent, manager, analyzer), the various applications enabling content structure, coordination, management, and display need to be constantly resynchronized. For example, if an administrator wants to add a new group of agents or new products, enabling this in other solutions would likely require significant programming. With CCIL, all of these can be accomplished through a single interface with a few mouse clicks.

No programming required

All interaction with CCIL occurs through an intuitive graphical user interface. Administrators do not require special training or a working knowledge of any particular programming language to define sophisticated content organization and associations. CCIL removes the need for programming because of the metadata residing at the heart of the solution. Administrators simply log in and define content structure and user privileges through pull-down menus. By defining the metadata and hierarchies of information, administrators control how information will be displayed across the various desk modules. At the same time, administrators can also alter the knowledge base metadata by sending instructions via XML, offering flexible administration.

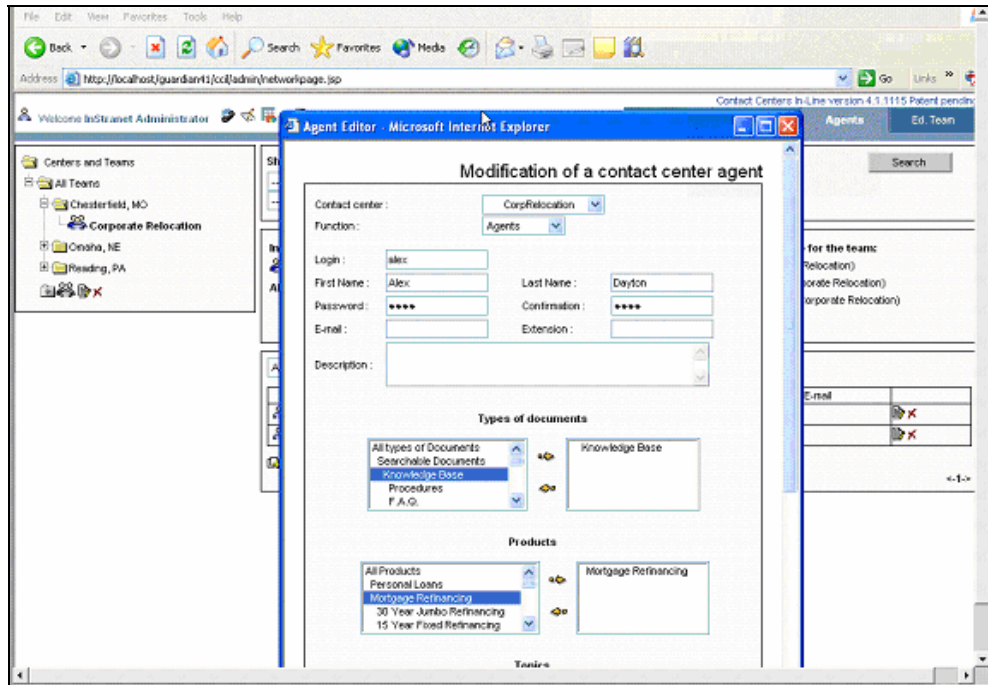


Figure 8. A graphical user interface provides a simple way to define complex interactions of a large amount of information

Integration with other administration tools

Those organizations wishing to share user log-in information between applications can opt to store the information in an LDAP directory. Administrators can also store this log-in information directly within the InStranet Content Application Foundation for a completely centralized set up.

The four CCIL desks help organizations manage the end-to-end processes required to optimize agent performance and achieve business goals: answer more calls with less people, increase quality of service, reduce average call times, increase up-selling and cross-selling, and increase first call resolution rates.

CCIL desks interact to enable effective business processes

While the CCIL desks provide powerful capabilities for a variety of users, their real power lies in the way they enable multiple functions from a single interface. The following is an example of how the various CCIL modules work together to enable organizations to easily handle all aspects of a product and promotion launch.

First, a marketing manager publishes content within the *Publisher Desk* using Microsoft tools and a pre-defined template. She pulls the appropriate logo from the Shared Library and previews the document via the online simulation tool. Once satisfied with the document, she routes it for approval through the *Publisher Desk's* built-in workflow process. She also schedules an automatic alert to remind content owners of the date by which they must verify and review the content, and enters an expiration date so the promotional content will automatically be archived once the promotion has ended. This allows organizations to leverage the content for future projects, but ensures agents do not use outdated content. At the same time, she enters an overview description

of the product and promotion launch into the schedule view, so contact center agents and managers will know they should expect to see the promotion soon. Based on the product category specified during the document creation stage, this information is sent to the appropriate contact center employees.

The marketing manager is notified once all reviewers have approved the document, and the approved content is automatically sent to the appropriate agents – in this case, all agents in the U.S. This new information is highlighted in red on the appropriate agents’ desktops, allowing agents to easily spot it. The field readiness management feature on the *Agent Desk* monitors agents to determine whether or not they have reviewed the new information, and automatically updates the *Administrator Desk* with agent field readiness status.

When the contact center manager sees the new content on the desktop, he sends a reminder to inform the agents that they should review the materials within the next 24 hours.

Example: Product & Promotion Launch Process



Figure 9. CCIL helps organizations handle all critical business processes from a single interface

The next day, the contact center manager accesses the *Analyzer Desk* module to see what percentage of agents still haven’t reviewed the new content. He sends a reminder and a quiz to those agents and they review the materials and complete the quiz. The contact center manager views the quiz results, and follows up with those agents needing further training.

When the promotion goes live, all agents are prepared to present the promotion. The Enhanced Agent Solving Experience guide assists agents through each step of the call and recommends the promotion at the appropriate point. Once the

promotion has ended, all related information is automatically archived, so agents do not mistakenly propose outdated offers to customers.

In an intranet or traditional knowledge management environment, this same process would have proved time-consuming, complex, and challenging to manage. With CCIL, the process is seamless and each employee can focus on the business issues instead of the tools needed to accomplish tasks.

Technical Architecture

CCIL and CAF were designed and built using the latest technologies and industry standards, providing maximum flexibility and interoperability with existing architectures. The three-tier architecture is comprised of a relational database that stores the data and workflow definitions; a Java application server layer that extracts and transforms data; and a Web server and client layer that delivers information and displays it via intuitive, user-friendly interfaces (see Figure 10).

This architecture provides InStranet customers with numerous advantages including the following:

- No application to deploy on the client side
- Scalability to support an unlimited number of users
- Integrated backup and recovery
- Industry-standard technologies enabling simple integration with enterprise applications

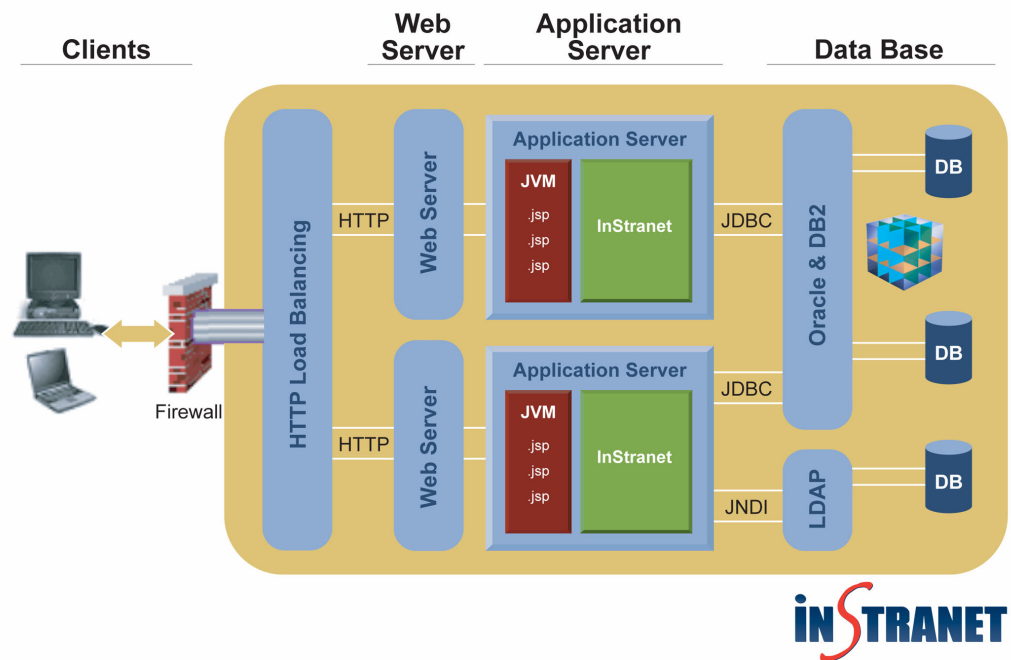


Figure 10. InStranet's three-tier architecture is scalable, high performing, and built according to industry standards

Industry-standard infrastructure ensures smooth integration

Because CCIL and CAF rely on industry-standard infrastructure and the J2EE standard, the solution easily integrates into an organization's existing infrastructure and with applications such as portals and CRM. CCIL is also easy to administrate and maintain since it is written in Java, requiring no specialized skill sets. All user interfaces are written in JSP, making it easy for developers to reuse them. Finally, a key advantage of a J2EE architecture is that it can run on any platform – including Linux, Solaris, HP, and Windows – without any additional programming.

Java server application logic enables enterprise-wide search capabilities and integration with LDAP directory infrastructures. Furthermore, by embedding multiple technologies (content management, analytics, search, dashboard, content aggregation, and transformation) into a compact Java footprint solution, CCIL can be implemented in a matter of days and weeks.

Unique database structure provides advanced content control

The core of the solution is a unique OLAP-based content repository that enables administrators to organize Web content according to the company's own internal business rules and terminology. Company-specific characteristics such as document types, product and service categories, user roles, internal departments, and geographic locations can be implemented within InStranet as standardized metadata called "dimensions." The multidimensional repository houses all the business rules for categorizing, securing, syndicating, and analyzing both metadata and subsequent content. Administrators can leverage these dimensions to provide agents, contact center managers, and content creators with a structured, intuitive, Web-based framework for distributing and retrieving critical business information.

One of the benefits of the multidimensional structure is that the system can serve thousands of requests for personalized information to users in a few seconds. Performance is a make or break acceptance factor in the corporate world. A call center agent will only utilize a knowledge base system if it can be used easily while on the phone with customers. Otherwise, the agent will revert to post-it notes and other workarounds.

Determining the information to serve is based on the contact center agent profile as defined by a combination of factors, such as the call context, the product, the customer's profile, the document types the agent is looking for, etc. For each of these factors, a database (or multiple databases) must be searched along a hierarchy to find the correct information. For example, a product belongs to a product of families, and all product family information is contained in a hierarchical structure.

Providing fast access to this information requires a querying system capable of intelligently balancing the filters processed by the storage mechanism and the filters managed in memory. In addition, this querying behavior needs to be combined with other search and filtering technologies, such as semantic search. While homegrown systems struggle to provide the necessary performance level to serve dynamic pages with little to no delay, the fast multidimensional

indexing within the InStranet Content Application Foundation enables this complex querying structure.

Multidimensional metadata approach

The many benefits of the multidimensional metadata approach include the following:

- Application logic is dependent only on metadata definitions and not on programming language, thereby simplifying application programming, integration, and interchanges.
- Metadata is shared between all end user functions to guarantee consistency between publishers, users, and managers.
- Metadata can be easily changed at any time to support evolving business and contact center issues, such as the need to add a new call reason or change product groupings.
- Metadata can produce meaningful analytics so organizations gain insight into issues that affect contact center effectiveness. For instance, publishers can determine why certain documents are the most frequently used, or which agent profiles are associated with the most activity for a given product.

CCIL's metadata provides crucial integration with other enterprise applications, such as CRM, CTI, IVR, and document management systems. This enables the system to automatically display a comprehensive customer view when an agent receives a call. Once the customer has chosen the appropriate option from the IVR system, and the CTI system has routed the call to the appropriate agent, CCIL retrieves the customer's information from the CRM application and displays it on the agent screen. From here, the agent has access to all relevant information needed to resolve the customer's issue. In addition, relevant up-sell, cross-sell, or retention offers are displayed, providing an opportunity for additional revenue or renewed customer satisfaction. Once the call has ended, the agent's call log is automatically fed back into the CRM system to enhance the knowledge base.

Flexible application integration options

InStranet customers have three options for integrating existing applications (e.g. CRM and CTI) within CCIL: a Software Development Kit (SDK), Application Exchange, and custom Web services.

Software Development Kit

The InStranet SDK enables a developer to access the application's Java objects and develop pages that enable integration with other enterprise applications. Constructed from the beginning to be 100 percent Java, the CCIL SDK provides a complete, easy-to-use set of tools that are fully compliant with industry standards, enabling developers to manipulate any repository object to achieve the desired result.

Application Exchange

InStranet provides a powerful set of tools, called Application Exchange (AppEx), that enable straightforward integration between CCIL and other enterprise applications. AppEx is essentially InStranet's ETL (extract, transform, and load)

integration framework into which any number of out-of-the-box or custom components can be inserted to provide seamless connectivity to virtually any existing application. With Application Exchange, CCIL can share users, dimensions, and documents with existing enterprise applications, such as Business Intelligence or CRM.

Custom Web services

InStranet can also develop custom Web services to integrate an organization's CTI, CRM, and IVR applications with CCIL.

Interfaces developed specifically for call center agents

Because they were designed specifically for call center agents, CCIL user interfaces are intuitive and easy to use. Whereas intranets, knowledge management tools, and homegrown solutions are limited in the way they display information, enable personalization, allow users to search for information, and feed relevant information to agents at the appropriate times, CCIL provides all these capabilities to maximize the agent's productivity and effectiveness. By offering all necessary features in a single, customizable interface, the solution allows call center agents to focus on the customer interaction.

XML ensures optimal data transfers

CCIL communicates with outside systems using XML, allowing virtually any application to read and/or transform data. All commands are available in HTTP mode and XML files can be batch processed. This facilitates the exchange of metadata and ensures content can be easily repurposed. Customers can also use a pre-built synchronization connector to easily replicate the application and data in one location for users in another location (on a different server).

Designed with performance and scalability in mind

CCIL has been designed to ensure scalability and performance, and is currently in use at firms with 8,000 users or more. CCIL can run on any kind of operating system and platform, and its three-tier architecture allows customers to use any number of servers to support any number of users.

InStranet provides consistent, linear response time under high performance loads—a key factor in contact center environments in which quick access to data is a necessity. In tests performed by IBM and PriceWaterhouseCoopers, InStranet achieved linear scalability in environments of up to 25,000 users (i.e. 1 million page hits per hour) using a content repository containing 300,000 documents and over 4.5 million objects. In fact, CCIL has proven to deliver the same number of pages per second regardless of the number of users. Furthermore, even when agents use CCIL for customer calls lasting two minutes or more, the application responds to agent inquiries within 2 to 3 seconds on average.

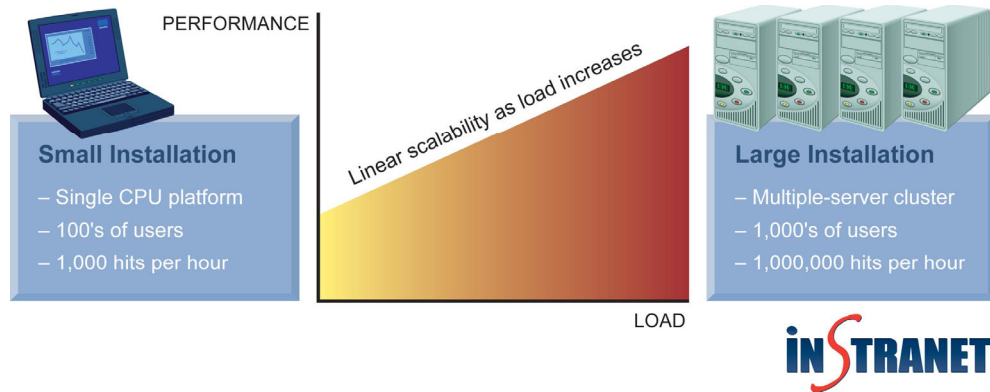


Figure 11. InStranet exhibits linear scalability as performance load increases

Because it is compliant with the J2EE standard, InStranet operates effectively with any J2EE Application Server, such as IBM WebSphere, BEA Weblogic, SunONE Application Server, and Oracle 9iAS. As a result, InStranet is able to leverage all the scalability and reliability features of applications servers, which include:

- Load balancing
- Connection pooling
- Clustering and fail-over

Conclusion

In a contact center, document and content relevance, timeliness, and effectiveness are critical to achieving the goal of customer satisfaction, cost reduction, and increased revenues. But simply deploying intranets or knowledge management products does not address the complex business processes underlying the delivery, measurement, and improvement of this information. Furthermore, attempting to build the necessary capabilities on top of these tools is expensive and time consuming, and ultimately fails to provide contact center agents with the solution they need to effectively perform their jobs.

InStranet's Contact Centers In-Line (CCIL) provides a comprehensive, out-of-the box solution with automated business processes to address the entire information lifecycle. Designed to meet the unique and complex requirements of today's contact centers, CCIL:

- enables fast contextual information searches and delivery, even under heavy loads;
- easily integrates with existing contact center systems and applications to ensure unified customer services;
- supports today's milestone-driven contact center interactions;
- offers reporting with key performance indicators to measure business improvement; and
- provides powerful and simple-to-use administration tools.

Built on industry-standard technology and open standards, CCIL is designed for fast deployment to deliver quick return on investment. By implementing CCIL

today, organizations can manage and use their content and documents for maximum effectiveness, and enhance customer service.

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