Empowering Contact-Center Agents through *Preference-Based Routing*™

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SeatLink improves the overall performance of a contact center, by allowing agents to influence the routing of inbound interactions based on their personal preferences.

Empowered, engaged agents drive contact center improvements in annual *retention*, daily *attendance*, shift *endurance*, and continual *adherence* to staffing schedules.

By improving agent satisfaction, corporations can simultaneously increase the quality of customer service and reduce operating costs. SeatLink is the first company to make agent preferences an integral part of routing technology. In doing so, it extends traditional load-based routing and the more recent skill-based routing, to achieve patent-pending Preference-Based Routing™. As a result, customer interactions are handled promptly, appropriately, and with unprecedented success.

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"The nature of contact centers is evolving, but enormous problems remain unsolved."

Traditional Contact Centers

In today's economy, many services are largely tele-services, in that the people receiving the service are remote from those responsible for providing it. A contact center is a collection of customer service representatives, or agents, that provide an interface between the service provider and its remote customers.

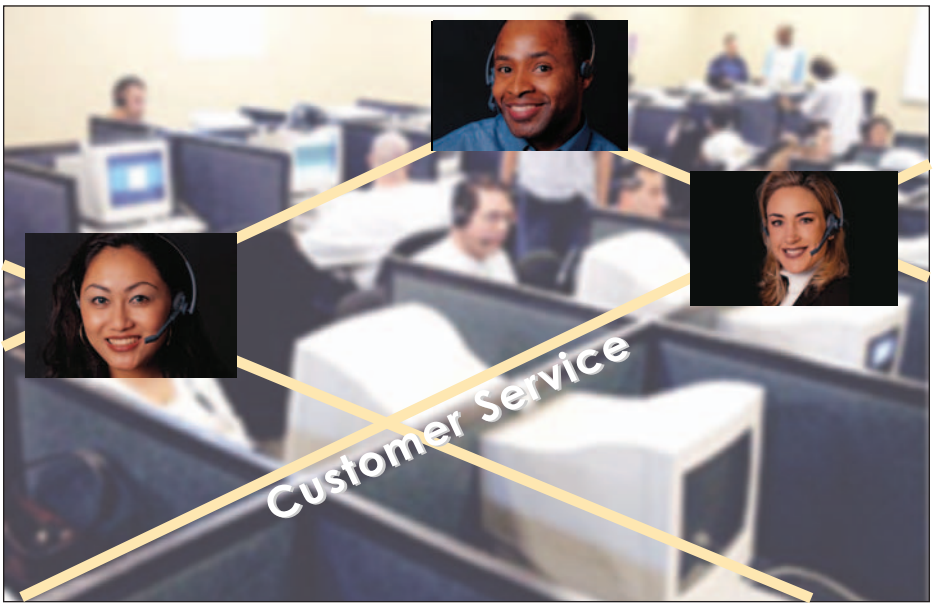
Usually a contact center is situated in a large space, perhaps partitioned into cubicles, where rows of agents wearing headsets sit in front of computer screens. With the dramatic technological advances of recent years, the nature of contact centers is evolving. The telephone is no longer the only means of interaction; use of alternative media such as email, web pages and web chat are on the rise. Yesterday's telephone call center has become today's multimedia contact center.

More than that, communication equipment - including private branch exchange (PBX), automatic call distributor (ACD), and Voice over IP (VoIP) Gateway - enable contact-center resources to form a cohesive unit without necessarily being under one physical roof. These so-called virtual contact centers range from small, interconnected groups of traditional call centers possibly located on different continents, to a large number of individual agents working out of their own homes.

A number of information technology (IT) support systems are used to ensure that customers are being served adequately and that business objectives are being met. For instance, customer-relations management (CRM) systems, provided by companies such as Siebel, maintain a database of previous interactions for each customer. This puts relevant customer information at the agent's fingertips through screen-pops, speeding the transaction, as well as revealing the potential sales opportunity.

Workforce-management (WFM) systems, provided by companies such as IEX and Blue Pumpkin, are designed to ensure that the right number of

Figure 1: Contact Center Agents



"Four conditions are symptomatic of lackluster contact center performance."

agents, with the right skills, is in the right place, at the right time. WFM systems utilize sophisticated algorithms to perform forecasting, staffing and scheduling, over periods ranging from weeks to days to half-hour increments. These systems also help manage agent performance and compensation.

As the environment of contact centers has become increasingly complex, the role of agents has expanded. Call centers have always handled different kinds of interactions, like sales inquiries, technical support, and customer service. Today's contact centers, however, are more likely to also manage different promotions requiring specialized knowledge, or even to handle service functions for a number of very different companies at the same time.

Figure 2: Adverse Contact Center Conditions

1	High Churn (poor retention)
2	High Absenteeism (poor attendance)
3	High Schedule Deviation (poor adherence)
4	High Fatigue (poor endurance)

Centers may even offer service in different languages, requiring agents with language fluency. In this environment, it is rarely feasible for every agent to handle every type of service request.

Disappointing Performance

Despite - and perhaps partly because of - advanced technology and systems, the performance of contact centers often falls far short of expectations. Contact centers are often staffed inefficiently. Current routing methods cause some agents to be unproductive, while others are overworked. As a consequence, some service requests are handled adequately, but too many others are not. Ultimately this leads to dissatisfied customers, and reduced profits for the firm.

We have identified four commonly reported conditions related to the agents that correlate with lackluster contact center performance: excessive churn, absenteeism, fatigue, and deviation from scheduled assignments.

Agent-retention problems are very common, with most contact centers reporting turnover rates of 20% to 200% per annum. The costs associated with this "churn" are significant. Most obvious are transition costs - the cost of hiring temporary help, of recruiting and training new agents, of adminis-

"High turnover and absenteeism are clear signs that agents are disenfranchised."

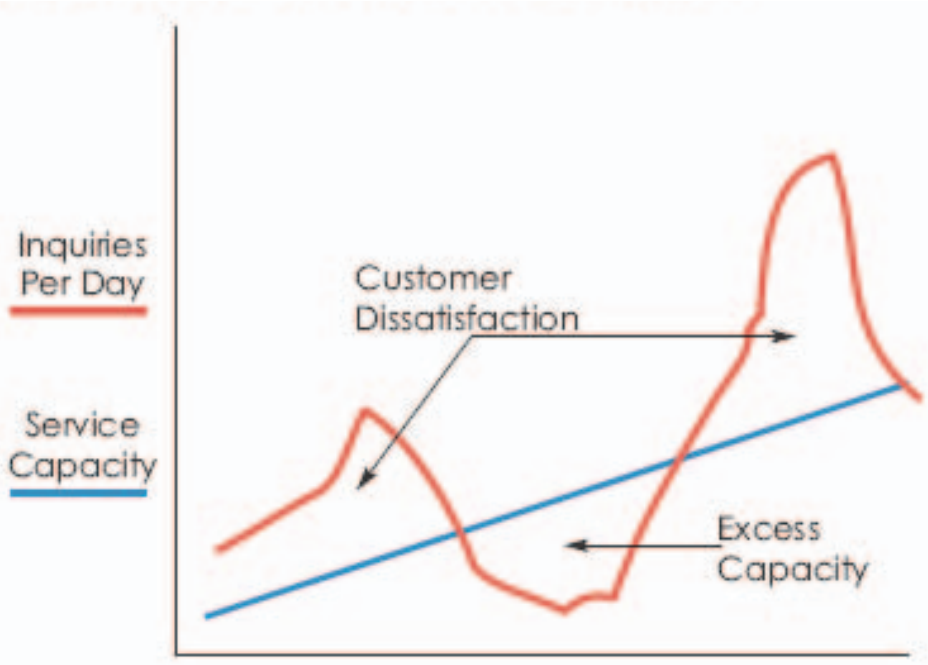
trative tasks like stopping benefit deductions, and so forth. It has been estimated that transition costs alone can be as much as 100%-200% of an agent's annual compensation. But there are also long-term productivity costs, which arise when too many agents are in a learning period at any one time.

The impact of high turnover is actually greater than it seems, because this condition inevitably is associated with high degree of uncertainty. It is difficult to predict the long-term effects of recruiting and training programs when retention levels vary significantly. To hedge against potential shortfalls, firms may over-compensate by recruiting and training more agents than are actually needed.

As with high turnover, many contact centers report high levels of absenteeism. Agents on the payroll simply don't show up for scheduled hours. Like turnover, high absenteeism rates can be compensated for by overstaffing, but at significant cost. And again, the uncertainty associated with absenteeism makes planning difficult. If we suppose an average daily absentee rate of 10%, the actual number of no-shows may fluctuate between 5% and 15%. Staffing algorithms tend to be less effective when agents are not committed to showing up in the first place.

High turnover and absenteeism are clear signs that many agents are dissatisfied with their jobs. And unhappy workers, we believe, tend to be less effective in the work that they do - as evidenced in poor schedule adherence and high shift fatigue. While these agents show up for work, they may be frequently "absent", in the sense that they often take breaks when they are supposed to be handling service requests. Similarly, they are slower and less alert. Their productivity drops off precipitously by the middle of the day compared to their peers.

Figure 3: Staffing Challenge



The Process is the Problem

Discussions about performance problems often lead to criticism of the agents. Managers allege that agents are unproductive,

"We advocate improving the work environment for agents."

lack motivation, and have a poor work ethic. They then put even greater pressure on the agents, by imposing Byzantine shop rules, "tight" scripting of customer interactions, and even recording every call. Not surprisingly, this heavy-handed approach often leads to even further declines in performance, as agents feel even more disenfranchised.

But are agents themselves really the root cause of the problem? Consider the history of the quality movement in manufacturing, beginning in the 1950s. At the time, inefficiencies in manufacturing were blamed on worker inadequacy, until pioneers W. Edwards Deming and Joseph M. Juran proved that improved processes are the key to improved performance. Their well-known 85/15 rule says that at least 85% of problems are due to deficiencies in the system itself, and less than 15% to faults in the workers.

In our view, disappointing contact center performance is largely attributable to faulty processes and not to individual agents per se. Effective solutions should be based on principles of work redesign and process engineering rather than replacing the agents. We advocate finding ways to improve the quality of the work environment for agents, whether they sit in large, factory-like contact centers or at home. We propose that they be involved in decision-making and indeed every aspect of operations. In our view, it all begins with agent involvement in call routing-the operational cornerstone of every contact center.

Who Takes the Call?

Suppose that a French-speaking customer calls at 7:45 AM with a question pertaining to customer service. Which agent should answer the call, and how is the inbound call routed to the agent?

In the past, calls were assigned to agents by a system of load-based routing (LBR), designed to ensure that agents respond to service requests promptly. Typical performance targets are such that 80% of the requests are answered within 20 seconds. Under this system, all agents belong to a single agent pool, and new service requests are assigned to the agent who

Figure 4: Customer Calls into Contact Center

Purpose:	Service
Language:	French
Media:	Telephone

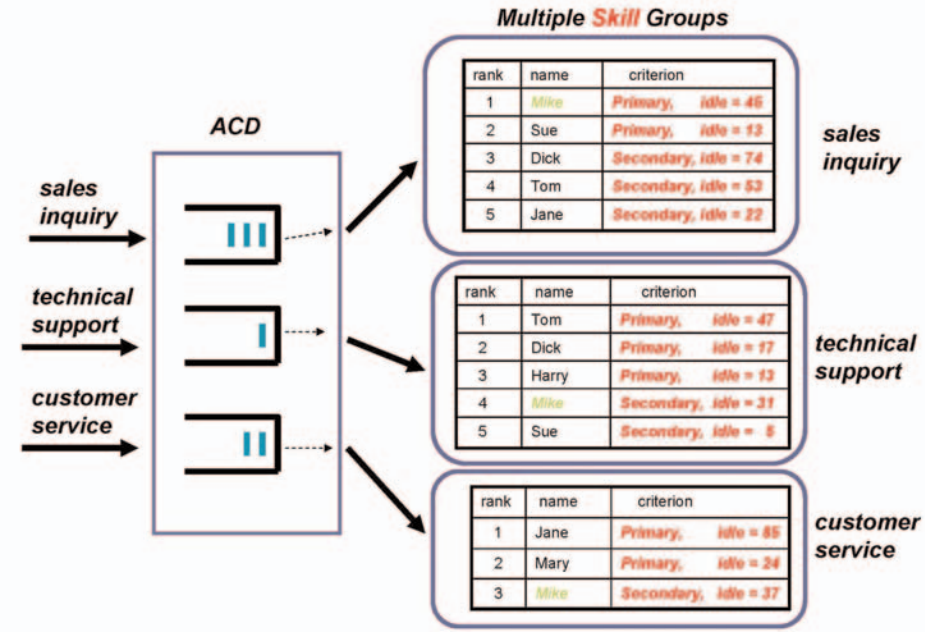
"Conventional skills-based routing completely ignores agents' discontent."

has been idle the longest. Conversely, when all agents are engaged, new requests are placed in a queue. Then when an agent becomes free, the system routes the caller who has been waiting the longest. Ultimately, the agent may be able to answer the question, but if not the call is transferred to an agent that has the requisite skills.

LBR is adequate for companies that receive only one type of call. But most contact centers today handle requests for many different purposes and across diverse media. Modern ACDs are capable of assigning calls to the most appropriate available agent in the first place. Once the identity of the caller and the purpose of the call are determined, the call is routed to the most qualified available agent. In other words, contact centers have gone beyond traditional load-based routing methods to a system of skill-based routing (SBR), which is designed to ensure that service requests are resolved by appropriate agents on the first call.

In Figure 5, we illustrate how the ACD routes new service requests to idle agents using SBR. Typically agents are organized into multiple skill-groups. In this example, some agents (e.g. Harry and Mary) can handle only one type of request, while others (e.g. Sue, Dick, Tom and Jane) can handle two types (at either a primary or secondary level). One agent (Mike) is proficient in all three skills. Agents with primary skills in a given area are given priority for requests of that type, even if another agent has been idle for more time. When a new sales inquiry arrives, for instance, it will be assigned to the agent with "sales inquiries" as a primary skill who has been idle the longest - that is, to Mike. Only if Mike and Sue were both engaged would the request be routed to a secondary-level agent - in this case, Dick. Likewise, if there is a queue, an agent who becomes free is assigned the request in his primary area that has been waiting longest, or in his secondary area if no calls in his primary area are waiting. Agents do not handle requests in areas they are not trained for, unless the longest waiting time exceeds a pre-determined threshold.

Figure 5: Skill-Based Routing Schematic



"Certainly preferences are as varied as the agents themselves."

Though SBR is more effective than LBR, it completely ignores widespread agent discontent. Agents remain "passive" in the sense that they have no control on the types of interactions they are handle. Another routing technology-that directly incorporates agents' call-handling preferences in real time-is needed to improve overall contact center performance in a meaningful way.

The SeatLink Solution: Preference-Based Routing

There is no disagreement that, whenever possible, a call should be routed to an agent that has requisite skills to handle the service interaction. But there are usually multiple agents that satisfy this condition who are sitting idle, and we can do better than random assignment.

Our central assertion is that a call should be routed to that agent that prefers to handle it the most. Perhaps some agents prefer to handle customer service calls rather than sales inquiries. Perhaps some agents prefer to handle French calls in the morning, and then shift over to English in the afternoon when they are tired. One thing is certain: preferences are as varied as the agents themselves. They have strengths and weaknesses, likes and dislikes. Given cross-training of skills and adequate staffing in the first place, why not take agent preferences into account, as long as overall performance targets are met?

A simple case is illustrative. Suppose that traffic volumes are such that we need 5 agents to speak English, and 5 agents to speak French during a particular shift. We assume that altogether we have 10 agents working, of which all 10 speak both English and French. If 5 of the agents happen to prefer speaking French, while the other 5 agents happen to prefer speaking English, then we can do much better than random assignment. We can meet of all of the goals of the system, while responding to agents' preferences fully.
By soliciting and then responding to preferences, managers demonstrate that agents' contributions are valued and that their active participation is critical to the core operations of the contact center itself. While this isn't a substitute for decent

Figure 6: Agents Vary by Skills and Preferences

	Jane	Mary	Mike
Profile	*Chicago *Age 32 *3 years experience	*Chicago *College Graduate *Sailing hobby	*Salt Lake City *Retired captain USAF *BS Engineering
Skill	*Billing, Service *English, French, Russian *Telephone	*Sales, Technical, Service *French *Telephone, email	*Service, Billing *English, French, Spanish *Telephone, email, IM
Preference	"I prefer to start my day with billing calls to meet my quota."	"In the morning, I prefer to answer emails."	"Le matin je prefere parler fracais."

"Priority for assigning calls is determined by a numerical preference score."

compensation and safe working conditions, agents that are involved in operational issues feel empowered, and this ultimately translates to improvements in personal and group performance. As a result, customer interactions are handled promptly, appropriately, and with unprecedented success.

SeatLink is the first company to make agent preferences an integral part of routing technology. In doing so, it extends traditional load-based routing and the more recent skill-based routing, to achieve patent-pending preference-based routing (PBR).

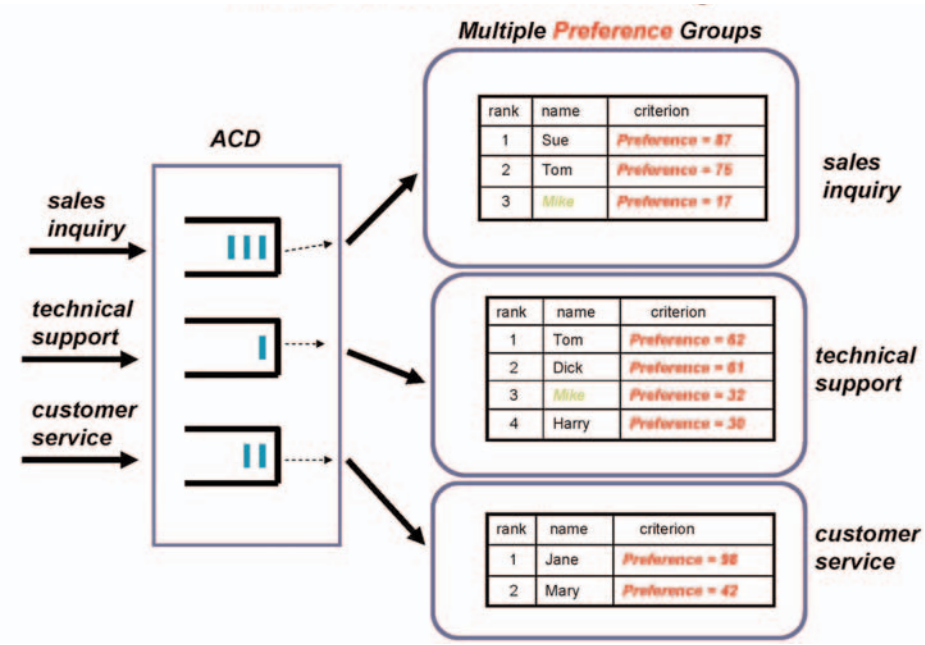
To see how this works, consider that individual agents are divided into groups based on both the proficiency and the desire to handle a particular type of service request. These "preference" groups are somewhat smaller than the previous skill groups, because some agents prefer not to handle certain interactions. Dick and Jane, for instance, do not appear in the sales-inquiry preference group, Sue does not appear in the technical-support preference group, and Mike does not appear in the customer-service preference group.

Priority for assigning calls within a preference group is determined by a numerical preference score. In the tables above, for example, a new sales inquiry would now be routed to Sue instead of Mike, because Sue's preference score - 87 - is highest amongst the agents in that preference group.

Preference-Need Alignment

While it is desirable to incorporate agents' preferences into routing methods, at times it may be impossible to do that. A case in point is when resources on hand are insufficient to handle demands on the system as a whole, as illustrated in the following example: Suppose, once again, that traffic volumes are such that we need 5 agents to speak English, and 5 agents to speak French during a particular shift. Now we assume that altogether we have 10 agents working, of which 5 speak English only, and 5 speak both English and French. No matter what the preferences are of these bilingual agents

Figure 7: Preference-Based Routing Schematic

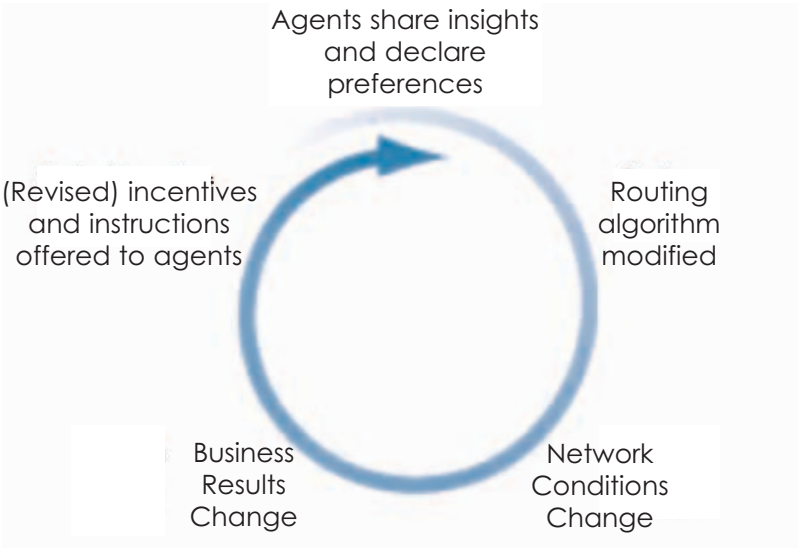


"We envision a dynamic, interactive feedback-loop for alignment of preferences with need."

(vis-à-vis language), we must require that they speak French, since otherwise many calls could not be handled at all. This simple example demonstrates that preferences can be incorporated into routing only if there are adequate resources already in place to handle the call volumes.

Preference-need alignment changes continuously in response to both changing agent preferences and traffic loads. Accordingly, we view PBR optimization more in the context of continuous process improvement than a calculation of a steady-state solution. At times, it may also be desirable for management to take corrective actions to respond to resource imbalances by providing various incentives to "influence" agents' preferences.

Figure 8: Preference-Need Alignment



One can envision a dynamic, interactive, feedback-loop.

Starting at the upper left of Figure 8 and moving clockwise, interaction-handling needs and/or incentives are communicated to the agents. These needs and incentives may be tailored to individual agents, and their expression can take different forms. For instance, agents might be given detailed information about current network conditions and recent business results. Alternatively, they might get only a management preference score, indicating how important it is to management for the agent to handle different kinds of interactions.

Agents then declare their preferences in response to this information. These declarations can also take different forms, from a simple ranking of tasks to a numerical agent preference score, showing how much the agent prefers handling one kind of interaction compared to others. By taking agents' preferences into account, the routing algorithm is modified. This in turn affects network conditions and the business results as well. Then once again management re-considers its instructions to the agents, and the whole process starts over again.

Keep in mind that while preference-based routing offers a radical new approach to contact center management, this approach does not have to be

"Only preference-based routing achieves optimal performance and reduced costs."

introduced in a reckless manner. The system should include controls that allow managers to switch back to skill-based routing whenever they deem it advantageous to do so. More generally, it is designed to allow managers to incrementally increase or decrease the extent to which preference-based routing is applied. Managers will be able to gradually increase the level of preference-based routing as the benefits become clear, without risking negative outcomes.

Win-Win Value Proposition

LBR is a simple approach to routing: all agents belong to a single agent pool, and new service requests are assigned to the agent who has been idle the longest. Unfortunately LBR leads to inefficient use of agents, and the inability to resolve issues on the first call. SBR, on the other hand, efficiently distributes calls to the agents that are best qualified to handle them. However, SBR is completely ignores widespread agent discontent.

These earlier approaches are eclipsed by a 3rd generation method. Only preference-based routing captures the richness of actively incorporating agents' preferences to achieve optimal performance and reduced costs. Empowering agents through PBR improves contact center efficiency. Empowered, engaged agents drive contact center improvements in annual retention, daily attendance, shift endurance, and continual adherence to staffing schedules.

But no less important is the fact that empowered agents have more meaningful interactions with customers, thereby improving the real quality of service. The idea is not only to make sure service requests are answered promptly and competently, but to make contact-center interactions more genuinely satisfying for agents and customers alike.

SeatLink enhances value for stakeholders across the entire interaction-chain. For agents we reduce stress, anxiety, burnout and boredom. Contact supervisors benefit from using our powerful tool to allocate work equitably and

Figure 9: Summary of Routing Technologies

Phase	Algorithm	Agents	Resolution	Quality
1st Generation	Load-Based Routing	Passive	Prompt	✓
2nd Generation	Skill-Based Routing	Passive	Prompt and appropriate	✓✓
3rd Generation	Preference -Based Routing	Active	Prompt, appropriate, and satisfying	✓✓✓

"A web-based toolbar is used to communicate incentives and preferences with the agents."

transparently. Executives benefit from the higher quality of service and productivity that translate to bottom-line financial results. By improving agent satisfaction, corporations can simultaneously increase the quality of customer service and reduce operating costs. PBR creates a compelling, win-win value proposition for companies and agents alike.

Implementing our Vision

SeatLink Preference Server is a stand-alone software-application that manages the data communications between various platforms in the contact center (e.g. ACD, CRM and WFM) and the agents.

A web-based toolbar on the agents' screen facilitates bi-direction communications about incentives and preferences. On the back end, the system incorporates agents' preferences, together with business priorities and network conditions, to derive optimal routing instructions. A mathematical program is used to maximize the overall effectiveness of the contact center, subject to constraints on the number of required agents handling each type of call. Preference-based routing is implemented when these instructions are uploaded to the ACD.

Figure 10: SeatLink Agent Toolbar

About the Authors

Michael Sisselman, Co-Founder & CEO, has worked in telecommunications for over 20 years. He is an accomplished entrepreneur (e.g. HotLens, MenuFax), and has worked as an executive in the corporate world (e.g. AT&T, AIG Telecom, Long Distance International). Michael has an MBA from Columbia University, and a M.Sc. in Econometrics from London School of Economics.

Ward Whitt, Co-Founder & Chief Scientist, is a Professor at Columbia University in the Department of Industrial Engineering and Operations Research. He has over 25 years experience as a researcher (e.g. AT&T, Bell Labs, and Avaya). He has been awarded 8 patents, with 4 more pending, and has published over 275 articles related to: contact centers, queues, games and optimization, simulation, and communication networks. Ward has a Ph.D. from Cornell University.

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About SeatLink

The mission of SeatLink, is to "link" customer service "seats" everywhere to business objectives. By allowing agents to influence the routing of inbound interactions in real-time based on their personal preferences, SeatLink improves the overall performance of a contact center. Empowered, engaged agents drive improvements in annual retention, daily attendance, shift endurance, and continual adherence to staffing schedules.

SeatLink is the first company to make agent preferences an integral part of routing technology. In doing so, it extends traditional load-based routing and the more recent skill-based routing, to achieve patent-pending Preference-Based Routing™. SeatLink servers help corporate contact centers to realize both higher quality-of-service and increased productivity.

SeatLink, Inc. was launched in 2004, and is located in New York. More information can be found on the web at:

www.seatlink.net

To contact your SeatLink representative, please call:

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