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Technology solves staffing challenge

New software analyzes scheduling

Derek Sankey

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Puneet Kapur found himself working for a technology start-up three years ago when he came across a seemingly insurmountable task: the company had to balance competing needs of customers around the world with those of its employees and the organization's own technology directions at a time when its information technology staff was very tight.

And they had to do it all yesterday. Until recently, the arduous task of divvying up different tasks to different people with different skill sets amid competing priorities was left to experienced managers who basically went on gut instinct.

"You throw in a bunch of disparate customers, the organization's own demands . . . and the needs of individual employees into a big pot and let it stew awhile and what comes out . . . is a scheduling nightmare," says Kapur, a software engineer for Calgary-based entertainment and gambling software development firm Chartwell Technology Inc.

While simultaneously working towards his master's degree at the University of Calgary, he found a technology solution to the massive human resources challenge that lay ahead.

It was a computer-based "release planning" software technology developed to provide "decision support" to managers who had to juggle competing priorities in an IT context, in terms of the incremental development and release of a software product. It's called

Optimize-Rasorp and it was developed by Guenther Ruhe, industrial research chair in software engineering at the U of C.

"What Guenther's system allows us to do is to try and find a solution to that

scheduling mess," Kapur says. "It does what computers are really good at: it exhaustively looks at all of the possibilities you could think of and tries to find solutions to fit your needs."

In other words, you feed all of your needs and variables into the system and it spits out the most favourable, optimal outcomes in terms of how to manage the staffing requirements in any given situation.

"Beyond IT, wherever you have a shortage of personnel and wherever you need to assign people to different tasks requiring different skills, you have an application to assist with that," Ruhe says.

He first developed the product a few years ago and as early as last year, it was being used to help managers make decisions about how to manage large projects. The latest release takes the concept one step further to operational implementation for staffing requirements.

Now, Kapur is beginning to apply the model to other environments. "I'm now looking at scheduling problems in health care settings, especially hospital emergency rooms," he says. "You have limited nursing staff and scheduling . . . is such an important job they give it to one person -- the full-time triage nurse."

Kapur, as part of his graduate studies, is determining the best way to make use of the program's capabilities to optimize the scheduling process for health care facilities. "It's the same problem with different words," he says.

While technology solutions to age-old human problems are nothing new -- there has been a trend to utilize software solutions to all kinds of business and HR problems -- even the best technology solutions will not replace the human factor altogether. "You don't supersede human decision-making," Kapur says. "Humans in the end still pick what they think makes sense. You just try to provide them with a quantitative basis in fact."

Piers Steel, a business professor at the Haskayne School of Business, has already developed a computer model he dubbed "synthetic validity," which is essentially an automated job candidate selection tool that uses a complex mathematical formula to determine the best candidates for the job.

As with any technology solution, it still relies on the skills of experienced professionals to ensure the best talent is ultimately selected. It's just another tool to help make the process more efficient and accurate.

Ruhe says his own solution not only presents the best possible outcomes based on an organization's staffing needs, it's able to balance many other

variables and reduces the workload for decision-makers.

"This is a tremendous task to plan implementation," Ruhe says. "One VP said he's spending one third of his time doing planning and re-planning because things are changing all the time."

An analysis of outcomes showed that the system is 30 per cent more accurate and efficient than even the most experienced people doing the same task.

"If you're a start-up or over-burdened health care facility and you're looking to save nickels wherever you can . . . and can get 30 per cent more out, that's a big win," Kapur says.

Derek.Sankey@Telus.net

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