

Harmon on BPM Paul Harmon

On Cognitive Process Analysis

In the Eighties, I worked with several companies that were involved in creating expert systems. For any who don't know, an expert system was a software application that used knowledge, usually encoded as rules, to analyze problems and provide answers. The best expert systems contained thousands of rules and could perform as well as the best human experts. Ultimately, the limits on the use of expert systems were the problems involved in capturing the knowledge, in the first place, and then maintaining it.

In the early Nineties it seemed as if expert systems were going to fade away, but, in fact, as I look around I find that the leaders in many different software fields are ex-expert systems developers who have simply found a new way to apply the basic concepts they first learned when they worked in expert systems.

One area that has benefited greatly, for example, is the whole area that is now called "business rules" or "decision management." In essence, individuals shifted from trying to analyze complex decisions with human knowledge, and confined themselves to analyzing more mundane business decisions using knowledge that was initially formalized in business policies. Many of the software tool vendors who started life as expert system tool vendors have repositioned themselves as "business rules" vendors.

In the past few years, however, led primarily by IBM and by business rule vendors, there has been a resurgence in capturing expert human knowledge and using it to guide processes. In essence, this represents an effort to extend most process models to deal with more complex and dynamic situations. It's one thing to define how an auto production line works. It's another to define how a hospital diagnoses patients who show up at the emergency ward. In the past we would have used workflow tools to define the auto production process, and we would have left it to doctors to decide how to treat patients in need of emergency help. Today we are beginning to think about how we might formalize the emergency room diagnostic process.

Once one gets serious about actually capturing the knowledge that physicians use in emergency rooms, one is a long way from conventional procedures and "business rules." One has returned to the challenges that faced expert systems developers in the Eighties. If process analysts are to deal with these problems, they will need a new version of the tools used by expert systems developers. They will need to know how to interview experts and to develop problem scenarios. They will need tools to

map knowledge concepts into vocabulary maps, and they will need to know how to structure hierarchical networks of concepts and knowledge rules. They will also have to figure out how to capture fuzzy concepts and incorporate probabilities into their reasoning chains, and they will have to have a very pragmatic strategy for capturing rapid changes in the knowledge they seek to use.

For better or worse, many of the new generation of expert systems are going to be used in conjunction with robotic and natural language systems. In the Eighties, expert systems were deemed the only field within artificial intelligence (AI) that was ready for commercialization. At that time robotics was still rather primitive, and natural language was nowhere near ready for prime time. Today, as a direct result of increases in computing capacity and speed, both of these AI domains are producing commercial results and future cognitive applications will be likely to be accompanied by natural language interfaces or embodied in a robotic device. This, in turn, will require cognitive developers to understand not only knowledge capture and use, but how to structure interfaces between robotic and natural language subsystems.

All of this is moving us quite far from the skill set that we normally associated with business process analysis and design. It certainly includes skills not taught to the typical business analyst or Lean analyst.

It's time that process practitioners begin to learn more about cognitive development. One place is to read up on Case Management (or iBPM) and another is to look at some books on AI or even an older book on expert systems. Another is to try developing a process using a rule-based BPMS tool, like Pegasys or IBM's Case Management offering.

The world isn't getting simpler. Business process analysis is going to increasingly involve dealing with processes that are mixed with a variety of cognitive components that are going to have to be developed and integrated in the process design. Now is the time to begin preparing for that future.

Author

Paul Harmon



Paul Harmon is the executive editor of BPTrends website and the Chief Methodologist of BPTrends Associates and the author of Business Process Change, 3rd