

Lisp Lives!

No longer linked only to AI, the language is enjoying resurgence in a wide range of arenas.

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Nostalgia hit when I saw Franz Lisp evangelists on the show floor at the SD West 2004 Expo sporting (got-lisp-p) black t-shirts with the simple answer, t, on the back. I thought Lisp was dead by association—at one time it was synonymous with AI, and we all know that sad tale of great expectations. But take another look! According to Sheng-Chuan Wu, Franz's Vice President of corporate development, the language has moved from research and development / academic / prototyping environments to commercial, revenue-generating applications. 'Lisp is a good solution for lots of commercial applications,' Wu says, 'and it's three to five times faster to develop applications in Lisp than in Java and C++. In the last 10 years, it's become a general-purpose programming language used in many modern and most of the time, very complex, applications.'

Furthermore, Wu says, 'People say 'Java is the gateway to the Internet.' We say 'Java is the gateway to hell.' Lisp is just a better alternative to the intelligent Internet: It runs on 14 different platforms and doesn't need any type of virtual machine because it compiles directly to native machine instructions on all popular microprocessor architectures.'

Investigating what's been happening in the world of Lisp, I found a variety of successful programs that attest to its solid performance. Notable among them, Ascent Technology's mission-critical decision support systems run the gamut of real-time decision support for gate and ground resource allocation, aircraft routing, tracking and maintenance scheduling for clients in the air transportation industry. According to Philippe Brou, Ascent executive vice president and cofounder, the attitude toward Lisp has changed significantly over the last two decades. 'Now, customers understand that as long as the system satisfies all their needs (in terms of features, performance and reliability), the language decision is somewhat irrelevant.' He adds, 'We've always used Lisp in all our decision support applications—from our very first system delivered 17 years ago, to our latest personnel allocation system, which can handle tens of thousands of workers in real-time.'

Lisp has also evolved from its origins as merely a desktop application embedding both decision logic and the GUI to a multitier architecture that combines Oracle on the back end, middleware layers (XML, IBM WebSphere MQ, Java, Corba), Web technology (JSP, Java, HTML) and back-end Lisp decision-support engines running on servers. According to Brou, the more sophisticated the system, the more probable it is that Lisp could be used to implement it. 'Anyone involved with applications where the complexity of the logic is very high is at least likely to consider Lisp as a viable option. Lisp provides tremendous productivity advantages, better time to market and easier handling of programming fixes: It's clearly a competitive advantage for many vendors. It's also easy for new programmers to learn, so recruiting isn't a problem, either.'

Wu listed a slew of commercial applications based on Common Lisp (CL) in such diverse domains as gaming, energy and manufacturing. Nintendo's Super Mario 64 and Naughty Dog's (now part of Sony Entertainment) blockbuster games Crash Bandicoot and Jak and Daxter: The Precursor Legacy are all built in CL, along with advisory systems for nuclear power plants, chemical plants, steelworks and others. It was used in the automatic redesign of the entire airframe of the new Boeing 777, as well as in audit planning systems. The scheduling system behind the amazingly successful Hubble telescope is also written in CL, as are the scheduling systems for major airports such as Heathrow and Atlanta, and the logistics

system deployed during the first Gulf War. CL is preferred by many complex bioinformatics applications, such as SRI's EcoCyc, which encodes and displays the entire metabolic pathways of the E. coli bacteria, as well as Harvard Children's Hospital Informatics Program's SNPper, which aids scientists in analysis of single nucleotide polymorphisms.

Clearly, it's time to take another look at Lisp. And, if anyone thinks that there are no new frontiers that can generate dynasties like Microsoft, just listen to what Bill Gates advised computer science majors at MIT early this year in a question-answer session: 'If you invent a breakthrough in artificial intelligence so machines can learn, that [will be] worth 10 Microsofts.'