On The Internet Nobody Knows You're a Lambda

Opportunities and Challenges for Developers of Lisp-Based Web Applications

Brent Benson
Oracle Corporation

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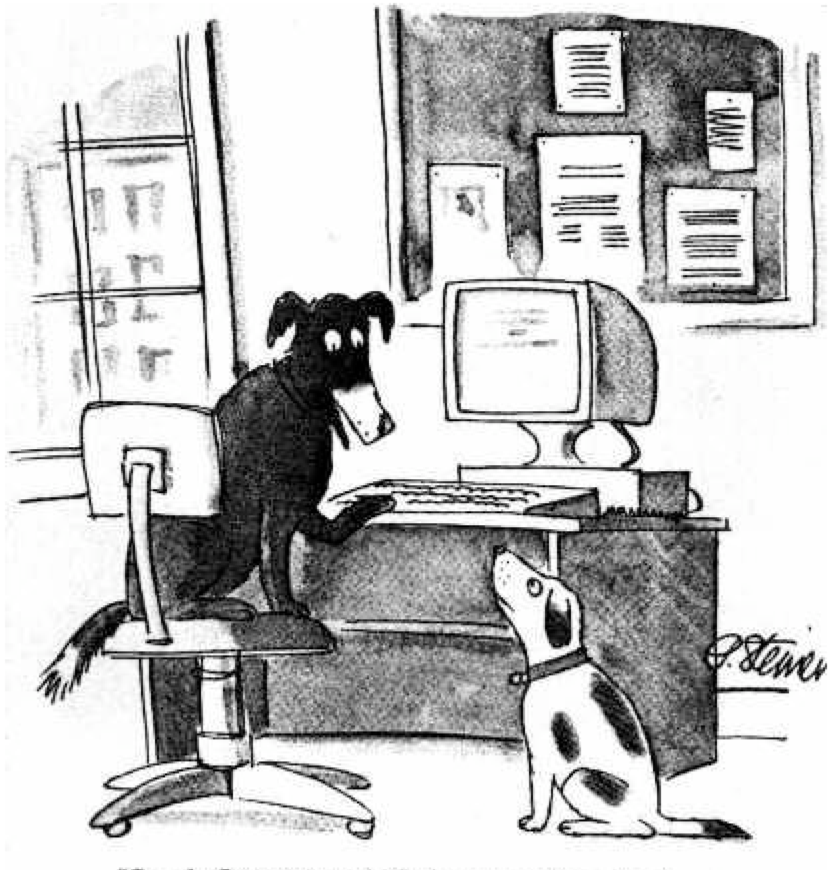

"On the Internet, nobody knows you're a dog."

Outline

- Traditional barriers to using Lisp for commercial application development
- Advantages and opportunities for developing web-based apps in Lisp
- Challenges and issues with using Lisp for web-based apps
- Quick mention of some tools, success stories and conclusion

Replies to “I want to use Lisp”

- “Lisp is not efficient enough”
- “We won’t be able to find programmers that know Lisp”
- “The runtime system for Lisp is too big and we can’t create standalone executables”
- “Lisp uses a garbage collector, and garbage collectors are less efficient than manual storage management”

On the Internet

- Application delivery mechanism: URL
- Application delivery tool: Web browser
- Things that are important to users
  - Features, performance, ease of use
- Things that the user doesn’t care about
  - Operating system
  - Programming language

Web-Based Apps: You’re In Control

- Application resides on the server
- Operating system is up to you
- Programming language is up to you
- Runtime library size and small executables a non-issue
- Free to choose based on productivity, reliability, cost
- Competitors have this same freedom, so choose wisely

Interactivity

- Interactive natures of Lisp development environments a key advantage
- Read-eval-print loop allows for quick prototyping and testing
- Integrated debugging allows for quick pinpointing of problems and immediately testing new code
- Delivery of fixes without bringing down server

Better Languages Attract Better Programmers

- A project doesn’t need thousands of programmers, just a few good programmers
- People who know Lisp are often thoughtful programmers who are driven to the best tools
- Application development is expensive, better programmers pay off

Closures and Continuations

- Handling arbitrary user navigation in a web browser is a difficult problem
- Back, forward, refresh, and history can take the user to arbitrary application points
- Application state can be saved in a closure or continuation and mapped to page views
- Clean model leads to ease of programming and better user experience

Macros

- Web-based applications have a great deal of redundancy and cry out for abstraction layers
- Declarative languages are a natural approach
- Main-stream declarative approaches lead to multi-level systems with different tools (CSS, JSP, templates)
- Macros provide a clean way to construct declarative abstraction layers using same tools, debuggers, etc.

Challenges

- Perception
  - Often need buy in from investors
  - Decide whether to be open about direction and explain advantages
  - …or gloss over and stress web standards
- Integration
  - With existing applications or libraries
  - Use web-services approach
  - Use Apache extensions or Java-based Lisp system

Challenges (continued)

- Support
  - Commercial software
    - Choices are fairly limited
  - Open Source software
    - More choices, some companies and individuals will provide paid support
- Not Invented Here
  - Using non-main-stream doesn’t mean that you shouldn’t continue to monitor new technologies and/or rethink approach

Tools

- Common Lisp
  - CL-HTTP
  - AllegroServe
  - Araneida
- Apache: mod_lisp
- Scheme
  - SISCWeb
  - PLT Scheme
  - JScheme, Kawa

Conclusion

- Web-based application users don’t care what technology is used on the server
- Lisp-based tools and environments have some real advantages for web-based apps
- Success stories: Yahoo! Store, Orbitz
- Ignore high productivity tools at your own peril!