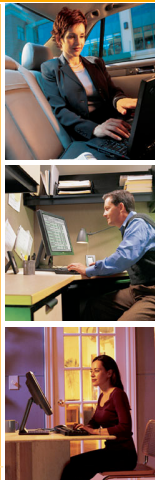


Citrix Online Overview and Project Proposal

Andrew Duncan
Senior Software Engineer



Citrix Online in a Nutshell

Be the world leader in creating and operating Web-based remote access, support and real-time collaboration services [...]

UCSB professor and 2 graduate students found **expertcity®**

GoToMyPC®



GoToMeeting™

1998 1999 2000 2001 2002 2003 2004 2005 2006

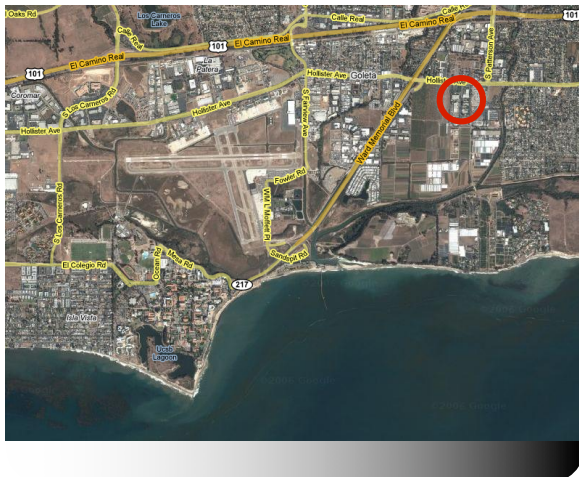
GoToAssist™
CRM Excellence
TMC
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Citrix Online Offices



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GoToMeeting from 10,000 Feet

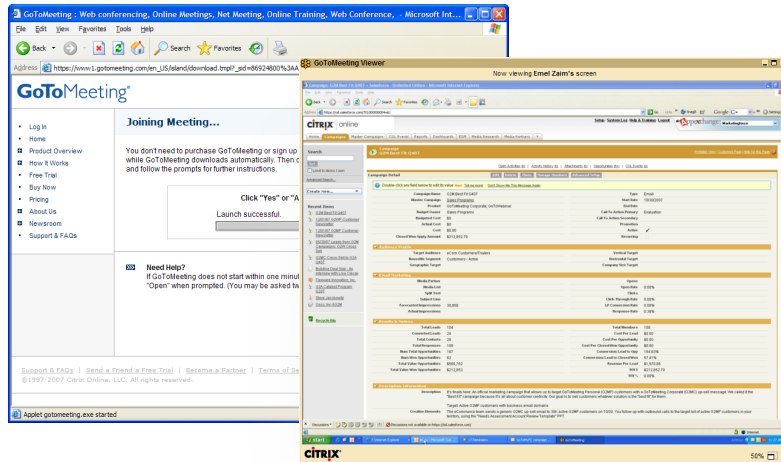


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User Experience – Today

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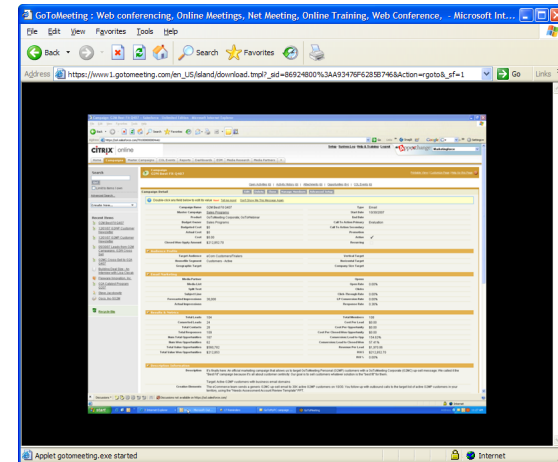


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User Experience – Tomorrow

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The Problem (er, Challenge)

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- We have lots (*lots*) of source code in C or C++
 - Code runs in “endpoint” apps, i.e. double-clickable
 - Apps are downloaded
 - To speed downloading, apps are split into several pieces, downloaded lazily (on demand) and communicate with inter-process messaging
- Web apps run ActionScript, a “C-like” (tastes like chicken) derivative of JavaScript
- We would like to automate (some of) the conversion of our code base to ActionScript

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From C/C++ to RIA

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C/C++	ActionScript 3.0
<pre>// n Fibonacci numbers int n = 10; int* f = new int[n]; f[0] = 0; f[1] = 1; int i; for (i = 2; i < n; ++i) { f[i] = f[i-1] + f[i-2]; } delete [] f;</pre>	<pre>// n Fibonacci numbers var n:int = 10; var f:Array = new Array(); f.push(0, 1); // f[0] = 0; f[1] = 1; var i:int; for (i = 2; i < n; ++i) { f[i] = f[i-1] + f[i-2]; } f = null;</pre>

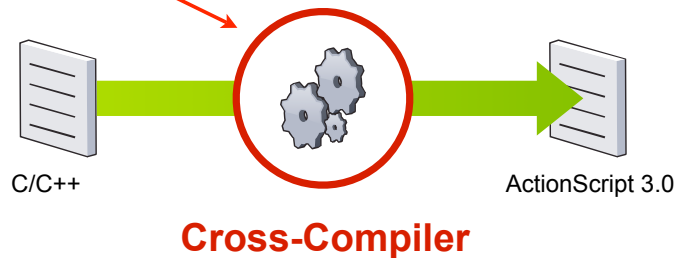
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C/C++ to AS Cross-Compiler

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This is what we would like to build! Interesting. Interested?



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Our General Approach

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- Step by step
 - Parsing — process C/C++ into some intermediate representation: XML or syntax tree data structure.
 - Processing — or “decorating the tree”. Make as many passes over the intermediate rep as needed.
 - Output — traverse the tree and print ActionScript code.
- Doesn't have to be perfect.
 - Can punt on stuff that's too hard, just say so and print the original code
 - Real people will be going over the output and tweaking it anyway
- Doesn't need a GUI, could be commandline
 - GUI would of course be nice :)

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Resources

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- Interview with Scott Petersen on his C/C++ to Flash cross-compiler
<http://blog.digitalbackcountry.com/?p=1095>
- [Programming ActionScript 3.0](http://livedocs.adobe.com/flex/201/) on Adobe LiveDocs
<http://livedocs.adobe.com/flex/201/>
- Comparison of Java 5 and ActionScript 3.0 <http://msimtiyaz.wordpress.com/flex/java-and-actionscript/>

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Resources

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- XML backend for gcc -- our best hope?
<http://www.gccxml.org/HTML/Index.html>
- Parser for C++ in C++ <http://www.cs.berkeley.edu/~smcpeak/elkhound/>
- C-to-C translator in OCaml <http://hal.cs.berkeley.edu/ccured/>
- These slides are online at
<http://www.andrewduncan.ws/CS-189-2008.pdf>
- You can contact me at andrew.duncan@citrix.com

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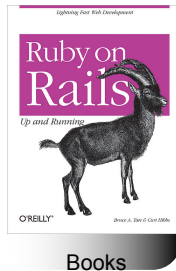
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How can Citrix Online help?

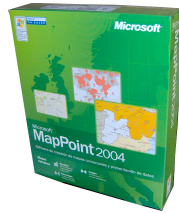
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Discussions



Books



Software



Keep you awake ;-)

What else do you need?

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The Bottom Line

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- We are generally interested in collaboration applications and Web 2.0 technologies
- We are very excited about working with UCSB students
- Some of our most distinguished engineers are UCSB graduates and former interns
- Our offices are 5 minutes from here by bike ;-)
- Capstone projects are a great opportunity to get an inside look at Citrix Online
- Please talk to us today...

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