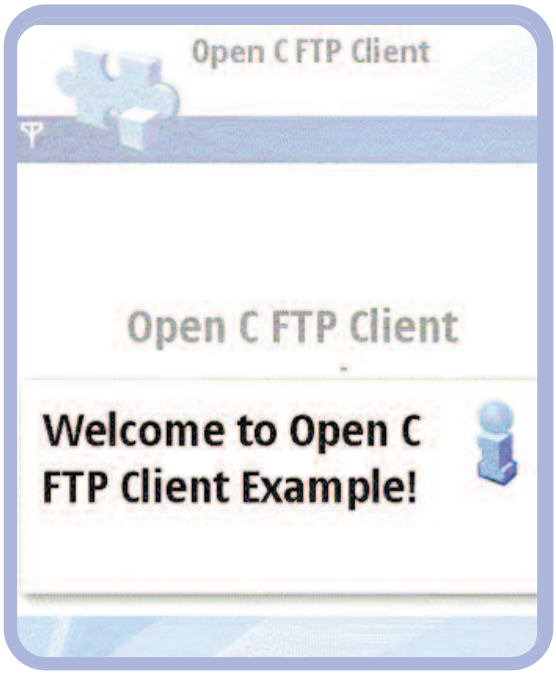
# SYSOPENDIGIA uses Open C to port applications to S60 Platform




Open C enables SYSOPENDIGIA to quickly convert an open source FTP program for use on S60 3rd Edition devices

The newly available Open C plug-in for S60 3rd Edition stands like a great bridge connecting two vast communities. On one side, there are millions of applications that have been created using the C language. On the other side, there is the Symbian OS community, which makes up the world's largest group of smartphone users. Just as a great bridge makes the commuter's journey much, much shorter and more direct, so too does the Open C plug-in for S60 3rd Edition promise to greatly shorten the path that developers must take to port their applications to the Symbian market.

While the plug-in only became generally available to developers in late March 2007, some early adopters, such as SYSOPENDIGIA Plc, have already completed the porting of applications using a beta version of the plug-in. The plug-in allows developers to create applications for S60 3rd Edition and S60 3rd Edition, Feature Pack 1 devices. Later this year, Open C will be incorporated directly into the platform as part of S60 3rd Edition, Feature Pack 2.

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*— Kari Laakso, Software Engineer, SYSOPENDIGIA Plc*

### SYSOPENDIGIA ports FTP application

SYSOPENDIGIA is a comprehensive solution provider and systems integrator for the real-time enterprise, offering its customers an extensive range of IT products and services. Its mobile applications range from remote phone management and remote help desk applications to operations control systems. To test out the utility of the Open C plug-in, the company chose an FTP application as the first application to be ported.

"We used an open source FTP routine library that was created by open source programmer Thomas Pfau (http://nbpfaus.net/~pfau/) as the first ported application. This library can be extended into a full FTP client, since all of the routines of FTP library are already available," says Kari Laakso, the software engineer at SYSOPENDIGIA who implemented the application port. "The FTP routine library is compatible with many C compilers and operating systems, including Linux, VMS, and Windows, so the result can be quite useful when it is integrated into other applications. It has been proven to work in many environments, and it is quite compact in size." Laakso also decided to port the simple qftp command-line client (also by Thomas Pfau), hoping that it

SYSOPENDIGIA

SYSOPENDIGIA Plc
Helsinki
www.sysopendigia.com

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### Looking ahead:

After using the converting of the FTP application library as its pilot program for the Open C plug-in, SYSOPENDIGIA plans to expand its use of the plug-in on larger projects. "The efficient use of Open C allows SYSOPENDIGIA to considerably enhance subcontracting projects," says Laakso. "It also complements the company's product offerings by increasing the productivity of some application development projects and significantly reducing development effort. Our intent is to convert more complex open-source software using the Open C plug-in and to use the results in the many enterprise-related projects in which our company is engaged."

would provide all of the necessary interfaces needed for the FTP library. "The key point is that this enables us to keep almost all of the business logic in the C language, with very few modifications needed to adapt it to the new platform," says Laakso.

At this early stage, says Laakso, the ported application was intended first and foremost as an example. The final application will be distributed via Forum Nokia with all of the source codes.

### SYSOPENDIGIA's experience with the Open C plug-in

"Since the nature of the project was to get experience with the Open C plug-in porting process, I tried to use as much of the original C code as possible," says Laakso. "In fact, almost all of the native code in the application is there just for the user interface. All of the actual business logic is inside code written in C, and nearly 80 percent of that is from the original open-source code base. This saved me from having to write any code to handle the FTP connection."

For his tool chain, Laakso used Carbide Express 1.1, the S60 3rd Edition MR SDK, and a beta version of the Open C plug-in. "By and large, the process was smooth, but in any such effort there will be temporary glitches," says Laakso. "In general, it is very common to encounter some glitches when converting code from one platform to another. Even if the code is written according to a well-standardized language such as C, these things can crop up because of differences in compilers. In actuality, the Open C plug-in beta works really well."

*"It is very easy to see the massive potential for the Open C plug-in."*
*—Kari Laakso*

### New POSIX libraries used in Open C

In January 2007, Symbian introduced four of the basic POSIX libraries on Symbian OS in P.I.P.S. (P.I.P.S. Is POSIX on Symbian): the libc, libm, libpthread, and libdl libraries. Libc is the C standard library, with system APIs mapped to Symbian OS APIs for better performance; libm is a mathematical library; libpthread implements POSIX-style threading support using the terms of the underlying Symbian OS thread support; and libdl implements POSIX-style dynamic linking.

Besides these four libraries, the Open C plug-in implements five other C libraries built on open source projects: OpenSSL (libssl) for secure sockets, libz for compression, libcrypt and libcrypto for cryptography functions, and the general-purpose libglib library of functions.

Open C makes smartphone application-development teams more productive by enabling a common code base across multiple platforms and easing the task of porting existing and open source code to S60 devices. This is particularly productive when bringing services to mobile users in situations where substantial portions of the service implementation already exist in a desktop implementation or open source project. The Open C libraries make it easy for development teams to port the application logic or connectivity middleware from the existing implementation, while rewriting the user interface to serve the needs of the mobile user.

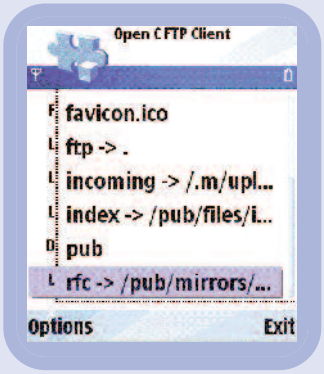
For example, the Open C Plug-in for S60 3rd Edition SDK includes an example project that converts files in Microsoft Word format to other formats, including PDF, TXT, and XML. The project begins with Antiword, an open source format converter, and illustrates all the steps required to port the project to S60 devices.

Open C makes it easier for developers with no Symbian OS experience to contribute to mobile projects. The large pool of developers experienced in C language work can now contribute immediate value to projects serving S60 users. Among other things, Open C makes it easy to write project modules on client/server management, 3D graphics using OpenGL ES, message queue management, and event-driven systems with little prior experience with mobile systems. "It is very easy to see the massive potential for the Open C plug-in," says Laakso. "This is why I am certain that it will be part of our future projects."

For more information, go to:

www.nokia.com/developer

The FTP application ported by SYSOPENDIGIA using Open C automatically adopted the look and feel of S60 platform applications.

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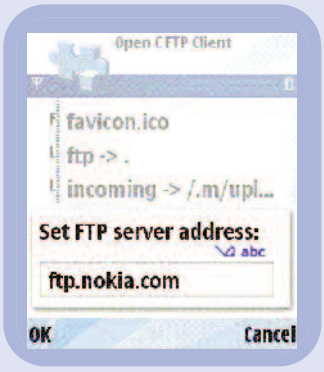


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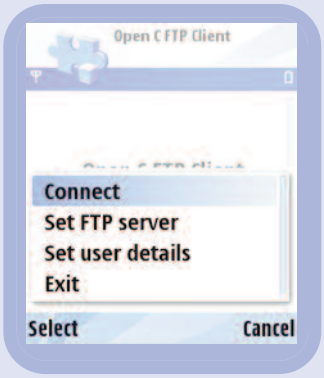


Making the connection...