

IST-002057 PalCom

Palpable Computing:*A new perspective on
Ambient Computing***Deliverable 47 (2.14.4)****Dissemination
PalCom Open Source**

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Aarhus School of Architecture

Revision: 1.0

**Project co-funded by the European Commission within the Sixth Framework Programme
(2002-2006)****Dissemination Level**

PU	Public	PU
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Integrated Project**Information Society Technologies**Information Society
Technologies

1 Table of Contents

1	Table of Contents	2
2	Executive Summary	2
3	Contributors	2
4	Introduction.....	3
5	PalCom Open Source Availability.....	4
5.1	The Try-It! Webpage	4
5.2	The Download Webpage	4
5.3	The Developer Webpage	4
6	Training Material.....	6
6.1	Developer's Companion	6
6.2	PalCom Javadoc.....	6
6.3	PalCom Code Tutorials.....	6
7	License.....	7
8	Legal Issues.....	8
9	Open Source Hosting	9
10	Further Plan for Open Source Dissemination.....	10
11	References	11
	Appendix A: Screenshot of the Download Webpage	12
	Appendix B: Screenshot of the Developer Webpage	13

2 Executive Summary

The PalCom Open Source Toolbox was launched for the public on November 5 2007 under the BSD license.

The software is hosted on PalCom's own website <http://www.ist-palcom.org>.

The software can be downloaded in packed form, or checked out using the open source Subversion version control system.

Training material for external users has been produced, and can be downloaded from the web site.

Further dissemination of the open source toolbox reaching beyond the project end is planned.

3 Contributors

The following people have contributed to this deliverable:

- Numerous people from the PalCom consortium (toolbox)
- Peter Andersen, University of Aarhus, datpete@daimi.au.dk (report)

4 Introduction

The objective for the WP14 deliverable 47 (2.14.4) is described in the updated Description of Work [DoW6]:

M 45: (D2.14.4) Vers. 2. of the open source Dissemination Toolkit. This deliverable will consist of the open source software in itself, of “external” training material and the hosting facility.

The previous PalCom deliverable concerning the PalCom Open Source dissemination toolkit [Del36], described a number of issues that had delayed the process of going Open Source. First and foremost the problem with palcom partner OOVm having left the project, after the mother company Esmertec closed them down. Furthermore there was not yet settlement about hosting facility and licensing.

The recommendations from the reviewers after the third PalCom review contained multiple items, relating to these issues. The ones relating to the Open Source Dissemination Kit are:

1. *Finalise an open source approach. The possibility to use the ObjectWeb community with the support of Alexandra Institute for consulting, training and promotion could be attractive.*
2. *Solve the open source legal issues as quickly as possible to allow access to the OOVm software and to understand how Siemens signoff will work in practice.*
3. *Finalise the concepts of Palpable computing into a release 1 specification that is consistent with the state of the open source to be released.*
4. *Further enhance inspection capability (architecture, integration of various inspection capabilities to achieve seamless browsing, user interface improvement...).*
5. *Further enhance implementation to take into account constraints (in particular for Pal-VM) towards an initial solid starting point for open source.*
- ...
8. *Ensure that WP15 material is made available for outside training.*

As can be seen in the sections below, the goal of making the PalCom software available to the public in the form of Open Source has been met. Some decisions, however, ended up being different than was envisioned a year ago. This will be elaborated below.

5 PalCom Open Source Availability

The PalCom Open Source Toolbox was made publically available on November 5 2007. The entry point to the open source software consists of the following three web pages:

- <http://www.ist-palcom.org/try-it/>
- <http://www.ist-palcom.org/download>
- <http://www.ist-palcom.org/developer>

which are all directly accessible from the palcom website mainpage

- <http://www.ist-palcom.org>.

In the following we will give an overview what is available from these three pages.

5.1 The Try-It! Webpage

The “Try it!” web page¹, <http://www.ist-palcom.org/try-it/>, is not really about open source. The page is meant as a first entry point to experiencing the kind of systems, which can be built and interacted with. The page provides a downloadable ready-to-run demo, which shows the central PalCom mechanisms of services, assemblies, and inspection through visual browsers on an example based on the GeoTagger assembly [Del 50], extended with the ability to display the photo taken on Google Earth [Earth]. The assembly in the demo runs on simulated devices, and as such does not require any special equipment for the user to try out the ideas.

This “teaser page” suggests that the reader continue on the Download page as the next step on the PalCom learning curve.

The Download page is described in the next section.

5.2 The Download Webpage

The Download web page, <http://www.ist-palcom.org/download/>, is the initial entry point for working with the source code of the PalCom Open Source dissemination toolkit.

A screen shot of the page is included in Appendix A.

The page starts by linking to the PalCom BSD License to make the user ware of the conditions s/he will be using the code under.

The page then explains three ways to get (parts of) the source code and precompiled tools/libraries down onto e.g. a developer’s PC:

1. The first option provided is to download a single ZIP file containing all the precompiled tools and libraries, which will allow immediate experimentation with the toolbox, without installing any special third-party developer tools
2. The second option allows the entire source code developer tree as well as the precompiled tools and libraries to be downloaded as a single ZIP file
3. The third option provides instructions on how to check out the entire software toolbox using the open source Subversion [SVN] version control software. Unlike option 1 and 2, this option allows for simple updating to the current version at a later time.

The page concludes by linking to the developer page, described below.

5.3 The Developer Webpage

The Developer web page, <http://www.ist-palcom.org/developer/>, contains a selection of useful information for developers, which have already obtained the software, e.g. using the instructions on the Download page.

¹ The page is too large to be depicted in this report; please refer to the web link to see it.

A screen shot of the page is included in Appendix B.

An overview of the information presented:

1. The most important section of the page for starters will be the “Guides for Developers”. This section provides links to the Developer’s Companion [DevCom], further described in the Training Material section below. Also direct links to quickguides for installing the software and required thirdparty tools are provided. Although also included in the Developer’s Companion, these direct links are for the type of developers, who do not want to read through a 70+ page manual to get this initial setup information.
2. As an alternative to downloading the entire software tree, the Developer page next provides a link to browse the entire source code directly from the web browser.
3. To help the new developer get acquainted with the software, the Developer page next link to the online Tutorials, which are distributed into a number of folders, each containing complete source code and building instruction for small demos of different features of the toolbox. This includes the geotagger demo, the result of which can be tried on the Try It! page.
4. The Developer page next provide a list of information relevant to potential developers, including public PalCom deliverables, papers etc.
5. Finally the page concludes by giving instruction on how to submit changes to the code base for inclusion in the Subversion tree.

6 Training Material

6.1 Developer's Companion

As mentioned in section 5.3, the most important training material, besides the information on the webpages, is the Developer's Companion [DevCom]. The companion is expected to be an invaluable source of information for developers especially in the starting phase. It is an evolving document, but at the time of this writing, it contains:

1. A roadmap to the companion
2. A summary of the PalCom concepts
3. Programming models for working with assemblies, services, Hgraph inspection, devices, and the dual VM approach supported by the palcom software
4. An overview of the code base (developer tree)
5. Installation guides including information on how to check out, install necessary third party developer tools, and how to build the tools and libraries
6. A survey of a number of assembly descriptions included in the code base
7. A survey of a number of devices included in the toolbox, either in the form of simulated hardware devices, or as code enabling physical hardware devices to participate in PalCom assemblies.
8. User guides for the different tools provided in the dissemination toolkit.

The different predefined services in the toolbox are not included in the companion, since these are available from the Javadoc, see next section.

6.2 PalCom Javadoc

A different set of training material is provided in the online PalCom Javadoc at the URL

- <http://svn.ist-palcom.org/svn/palcom/trunk/doc/javadoc/html/index.html>

Besides all the different APIs, further explained in the PalCom Open Architecture deliverable [Del54] it also contains an overview of all the services included in the code base.

6.3 PalCom Code Tutorials

As mentioned in section 5.3 above, from the Developer page, the developer has access to a number of online Tutorials. These are organized into a number of folders, each containing complete source code and building instruction for small demos of different features of the toolbox. This includes the geotagger demo, the result of which can be tried on the Try It! page.

The tutorials also include much more low level snippets, including examples of how to do cross language calls between Smalltalk and Java when executing on the Pal-VM.

The collection of tutorials is expected to be augmented as the code base matures.

7 License

As noted, the PalCom Open Source Toolbox is provided under the (new) BSD license [BSD], which is very liberal to the users of the software, i.e., it does not mandate uses of the software to be open source themselves. This licensing scheme was decided upon to allow for the most widespread use of the toolkit.

The full license text is:

```
Copyright (c) 2004-2007, The PalCom Project consortium.  
See http://www.ist-palcom.org/consortium.
```

```
All rights reserved.
```

```
Redistribution and use in source and binary forms, with or without  
modification, are permitted provided that the following conditions are  
met:
```

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of the PalCom Project nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

```
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LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR  
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT  
OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,  
SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT  
LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,  
DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY  
THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE  
OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
```

8 Legal Issues

As mentioned in the introduction, a number of legal issues had to be settled before being able to go open source. The most predominant one was the sudden loss of PalCom partner OOVM, which was closed down by their mother-company Esmertec. After a number of legal negotiations, an agreement was made between University of Aarhus and Esmertec, that

1. University of Aarhus takes over OOVM's remaining budget and obligations within PalCom
2. In return University of Aarhus takes over all rights of the code produced by OOVM within PalCom

This settlement allowed the code produced by OOVM to be part of the PalCom Open Source dissemination toolkit.

Another issue was the reservation by Siemens AG that they cannot give a general permission to put anything they produce within the project into open source. An agreement was made within the PalCom Programme Management Committee that such code contributions would then be judged in a case-by-case manner, in accordance with the already existing Consortium Agreement.

The final legal issue to be settled was the choice of licensing scheme for the software. After thorough discussions and investigations of pros and cons, as mentioned in section 6, the liberal BSD license was agreed upon.

This has the benefit of being compatible with the also very widespread (L)GPL licenses [GPL][LGPL], but not insisting on any open source mechanisms for uses of the PalCom code. In this way the most widespread dissemination and exploitation of the code base, both academically and commercially will be possible.

9 Open Source Hosting

As mentioned in the introduction, the hosting of the open source toolkit is provided through the PalCom web site <http://www.ist-palcom.org> itself.

This is physically located on the University of Aarhus, which expect to be able to keep this facility available after project end, since there are very few expenses involved in this.

This is in contrast to using ObjectWeb, which was being considered earlier.

The main reasons it was decided to abandon ObjectWeb was

1. ObjectWeb prefers projects which “fit into” their existing set of projects, expects a lot of direct use of other ObjectWeb projects as well of a lot of contributions to other ObjectWeb projects. We feel that we would have to “bend” the PalCom ideas and implementation too much in order to fulfil this
2. Choosing ObjectWeb requires a PalCom consortium member to become (paying) members of the ObjectWeb organization. This may become hard to finance after project end.

As a second alternative, we have been in contact with the managers of the upcoming EU managed open source repository OSOR [OSOR], which seemed like an obvious place to disseminate the results of an FP6 project. This idea has been abandoned for now for two reasons:

1. OSOR will not launch until late 2007
2. OSOR’s initial focus is “Open source in the public sector”, and even though they are considering it, they are not offering hosting for FP6/FP7 projects.

If it becomes possible at a later state, we intend to become listed on the OSOR site.

10 Further Plan for Open Source Dissemination

The further plans for open source dissemination are detailed in the Final Plan for Dissemination of the Knowledge, being part of the Final Activity Report [FinalAR] of the PalCom project. At the time of writing it includes:

1. Press releases for CORDIS Wire and general press.
The CORDIS announcement was published on November 17 2007, see [CORDIS].
2. Further enhancement of Developer's Companion
This training material is constantly being updated, and we are going to encourage that future developers continue to do this.
3. A "Seminal Paper" – a planned refinement of [Del53] with the current working title "Palpability considered necessary" in being prepared. We envision that the article could be published in an ACM transaction, e.g. TOCS. This will greatly increase the awareness of the project, and thus direct more potential users to our open source site.
4. Improved online tutorials
Like for the Developer's Companion we are going to encourage future developers to update this online documentation, including the javadoc.
5. Use of PalCom open source in one or more Computer Science courses
It is being investigated if this is feasible on University of Aarhus
6. Attempt to establish a community around the open source toolkit
We will be using our widespread academic and industrial networks to attempt to establish a future community around the open source toolkit. We are investigating the possibilities of hosting (self-maintained) mailing lists, blogs etc. along with the download site.
7. Industrial exploitation by 43D, Siemens and Whitestein
Please refer to [FinalAR] for details.
8. Potential consultancy business around the toolbox by Alexandra Institute
It is being considered to include the PalCom infrastructure as one element in a general "platform" toolbox promoted by Alexandra Institute.
9. New research projects (EU and non-EU)
Several projects are being planned, e.g. in the area of healthcare. Please refer to [FinalAR] for details.
10. Announcement on EU open source forge when available
The [OSOR] is expected to become available end of December 2007. If FP6 projects are allowed there, we will attempt to get a reference to PalCom included on [OSOR].

11 References

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- [Earth] Google Earth
<http://earth.google.com>
- [FinalAR] PalCom Final Activity Report (not public)
<http://www.ist-palcom.org/publications/review4/management/Final-Activity-Report.pdf>
- [GPL] GNU General Public License
<http://www.gnu.org/copyleft/gpl.html>
- [LGPL] GNU Lesser General Public License
<http://www.gnu.org/licenses/lgpl.html>
- [OSOR] European Commission Open Source Observatory and Repository
<http://www.osor.eu>
- [SVN] Version control with Subversion.
<http://subversion.tigris.org>

Appendix A: Screenshot of the Download Webpage

Palcom: Download - Mozilla Firefox

File Edit View History Bookmarks Tools Help Google PageRank

palcom
//making computing palpable

Home | Contact | Intranet Print Send Link

PalCom Binaries and Open Source

The PalCom software can be used in various forms:

Firstly we suggest that you download and try the demos on the [Try It](#) page, thus familiarizing yourself with the ideas and most important technical terms in the software.

All the binaries and open source files are provided under the BSD license:

- [PalCom License](#)

If you experience any problems with the deployed code, please contact

- [palcom2-opensource](#)

Binaries: Out of the Box use

If you want to experiment with the PalCom software in a bit more detail than the precompiled demos in the [Try It](#) page, you may want to download the so-called "Out of the Box" package of the software, which - as the name suggests - contains precompiled tools and libraries ready to experiment with, but does not contain the many source level files the software is built from.

To get started with the software, see the [Developer](#) page.

The file to download is a zipped archive:

- [palbox.zip](#) (24,53 Mb)

Open Source: Download as one file

As of November 5 2007 the PalCom software is available as open source under the [BSD license](#).

As explained in [The PalCom Subversion Repository](#), below, you can check out the system under version control, enabling the possibility to update your copy with the latest changes at any time.

If, however, you just want to try working with the PalCom open source software, and would prefer a simpler way to get it, you can instead download the following file, which is a Zipped archive of the full open source developer tree. It also contains the full contents of the [Out-of-the-box](#) package.

To get started with the software, see the [Developer](#) page.

- [palcom.zip](#) (44.55 Mb)

Open Source: The PalCom Subversion Repository

The Palcom Software can be checked from the PalCom [Subversion](#) repository.

The software can be built on Linux, Macintosh (OSX), and Windows (using [Cygwin](#)). You can build the software using either command line tools, or the [Eclipse](#) development environment.

For a very short introduction to Subversion, a general description of the PalCom Repository, and instructions on how to check out the software from the command line, see

- [Palcom-SVN.txt](#)

For instructions on how to use Eclipse to check out the software, see

- [Eclipse-SVN.txt](#)

To get started with the software, see [Guides for Developers](#).

Notice that you will get a "read-only" checkout this way, that is, the files can be changed, but you cannot commit your changes to the PalCom repository.

We expect to allow for external contributors - please refer to [Contributing Code](#).

Start Developing with the PalCom Toolbox

Once you have downloaded or checked out the PalCom software, you are ready to install the system and start developing with the PalCom Toolbox. This is further explained on the [Developer](#) page.

PALCOM DOWNLOADS

The following links point to the various forms of download and check-outs of the PalCom software, which are described in the main page at the left of this box.

- [Out-of-the-box download](#)
- [Open source download](#)
- [Open source check-out](#)
- [Start Developing](#)

Home | Contact | Intranet

Navigation menu:

- Home
- What is palpable computing
- Consortium
- Approach
- Application areas
- Software architecture
- Toolbox
- Try it!
- Download
- Developer
- Publications
- Activities
- For the press
- Links
- Contact

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Appendix B: Screenshot of the Developer Webpage

Palcom: Developer - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Home | Contact | Intranet

Print Send Link

Home

- > What is palpable computing
- > Consortium
- > Approach
- > Application areas
- > Software architecture
- > Toolbox
- > Try it!
- > Download
- > Developer**
- > Publications
- > Activities
- > For the press
- > Links
- > Contact

Developing with the PalCom Toolbox

Once you have downloaded or checked out the PalCom source code, as described on the [Download](#) page, you can use the information listed below to get started as a source level developer in the PalCom software toolbox.

We also encourage you to try the demo on the [Try It](#) page to get a glimpse of the concepts and implementation of PalCom.

Guides for Developers

A number of documents are available describing how to program with the PalCom Toolbox.

The main documents are

- [PalCom Developer's Companion \(PDF\)](#)
which contains a roadmap to the PalCom software toolbox, descriptions of the programming models, and detailed installation guides.
- [PalCom Javadoc](#)
which details the many APIs involved in the software

As noted, the Developer's Companion contains detailed instructions for installation. For a quick installation, you may refer the installation guides directly here in the browser. The following list links to the most important setup files:

- [Palcom-SVN.txt](#)
Instructions containing a very brief introduction to Subversion, how to get subversion for your machine, and descriptions on how to check out the palcom code repository
- [Eclipse-install.txt](#)
Instructions for how to install Eclipse and required plugins
- [Eclipse-SVN.txt](#)
Instructions on how to use Eclipse to do the SVN checkout of the PalCom Repository instead of having to use command line command
- [Eclipse-build.txt](#)
Instructions on how to build the different Eclipse projects involved in the PalCom toolbox.
- [Command-line-tools.txt](#)
Instructions on how to set of your environment to use command line tools to build and execute PalCom software. Includes a list of the most commonly used tools.
- [Cygwin-Install.txt](#)
Instructions on how to install and configure the prerequisite Cygwin tools to be able to source-level develop with PalCom on Windows

Browse the PalCom Subversion Repository

You can browse the source code of the PalCom Toolbox directly in your web browser, simply click on the link

- <http://svn.ist-palcom.org/svn/palcom/trunk/>

Code Tutorials

A number of tutorials are available from the

- [palcom/doc/tutorials](#)

directory.

These will be described in some detail here later...

Background Information

For background information on the PalCom concepts and implementation we further refer

- [PalCom Public Deliverables](#)
EU Deliverables demonstrating the development and use of the PalCom ideas. To be complemented final deliverables for the project December 2007
- [PalCom Publications](#)
Publications produced throughout the project
- [PalCom website](#)
Further we encourage you to browse around in the PalCom website, which contains up-to-date information about the project, its background, current activities, and results.

Contributing Code

As mentioned in [Open Source: The PalCom Subversion Repository](#), you cannot commit changes to the code that you check out anonymously from the PalCom repository.

We expect to allow for external developers to be registereed for commits too in the near future, but in the meantime, please send a mail to

- [palcom2-opensource](#)

if you have suggestions for changes in the code or the documentation.

If possible, please send your suggestions in the form of a unified diff (diff -u) between your version and the original version.

DEVELOPER INFORMATION

- [Guides for Developers](#)
- [Browse the Source Code](#)
- [Code Tutorials](#)
- [Background Information](#)
- [Contributing Code](#)

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