

# **URBI Doc for umake**

## **User documentation**

**(book compiled from Revision 405M)**

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# **URBI Doc for umake: User documentation: (book compiled from Revision 405M)**

by Matthieu Nottale and Benoit Pothier

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# Chapter 1. Introduction

Umake is a simple script that facilitates the compilation of URBI objects. It can be used:

- To make a library containing your objects code for a specific architecture. This library can then be distributed.
- To link libraries and code with an URBI Engine SDK, which generates an executable containing the URBI engine and your Objects.
- To link libraries and code with the URBI Remote SDK, which generates an executable that can connect to an URBI server using a TCP connection and make your objects available to this server.

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# Chapter 2. Install URBI on your machine

## uinstall

If the URBI package you got is a tar archive, you'll need to first install URBI before using it.

You need to enter the **bin/** directory of your URBI distribution, and type **./uinstall dest-dir**. `dest-dir` being where you want URBI installed.

Check that:

- You have the right to write in `dest-dir`. Use **sudo** if needed.
- You don't install in a subdirectory of where you untared your URBI package.

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# Chapter 3. How to use umake to create engines and components?

## Basic usage

To compile all source files in the current directory (and its subdirectories) and link them with the Remote SDK, simply type **umake**. To compile all source files in the current directory and produce a library, type **umake-lib**. To compile all source files in the current directory and link with the Engine SDK, type **umake-engine**.

```
$ ls

foo.cc foo.hh

$ umake

/usr/local/gostai/core/linux/libtool
--tag=CXX --mode=compile g++ -O2 -pthread
-I/usr/local/gostai/core/include -c foo.cc -o foo.lo g++ -O2 -pthread
-I/usr/local/gostai/core/include -c foo.cc -o foo.o
/usr/local/gostai/core/linux/libtool --mode=link --tag=CXX g++ -O2
-pthread -L/usr/local/gostai/core/linux/remote -o
urbiengine-linux-remote ./foo.o
/usr/local/gostai/core/linux/remote/*.la mkdir .libs libtool: link:
warning: library
`/usr/local/gostai/core/linux/remote/libkernel-remote.la' was moved.
libtool: link: warning: library
`/usr/local/gostai/core/linux/remote/libkernel-remote.la' was moved.
g++ -O2 -pthread -o urbiengine-linux-remote ./foo.o
-L/usr/local/gostai/core/linux/remote
/usr/local/gostai/core/linux/remote/libkernel-remote.a
-L/tmp/urbi/gostai/core/linux/remote

$ ls

foo.cc foo.hh foo.lo foo.o urbiengine-linux-remote
```

## Specifying the source

You can pass to umake a list of files and directory. Files can be sources, headers and libraries. Directory will be searched and all the sources and libraries they contain will be included in the build.

```
$ ls -R .

.:
uobj1 uobj2
```

```
./uobj1:
myuobj1.cc

./uobj2:
myuobj2.cc

$ umake uobj1 uobj2

/usr/local/gostai/core/linux/libtool --tag=CXX --mode=compile g++ -O2
-pthread -I/usr/local/gostai/core/include -c uobj1/myuobj1.cc -o uobj1/1.lo
g++ -O2 -pthread -I/usr/local/gostai/core/include -c uobj1/myuobj1.cc -o
uobj1/1.o /usr/local/gostai/core/linux/libtool --tag=CXX
--mode=compile g++ -O2 -pthread -I/usr/local/gostai/core/include -c
uobj2/myuobj2.cc -o uobj2/2.lo g++ -O2 -pthread
-I/usr/local/gostai/core/include -c uobj2/myuobj2.cc -o uobj2/2.o
/usr/local/gostai/core/linux/libtool --mode=link --tag=CXX g++ -O2
-pthread -L/usr/local/gostai/core/linux/remote -o
urbiengine-linux-remote uobj1/1.o uobj2/2.o
/usr/local/gostai/core/linux/remote/*.la mkdir .libs libtool: link:
warning: library
`/usr/local/gostai/core/linux/remote/libkernel-remote.la' was moved.
libtool: link: warning: library
`/usr/local/gostai/core/linux/remote/libkernel-remote.la' was moved.
g++ -O2 -pthread -o urbiengine-linux-remote uobj1/1.o uobj2/2.o
-L/usr/local/gostai/core/linux/remote
/usr/local/gostai/core/linux/remote/libkernel-remote.a
-L/tmp/urbi/gostai/core/linux/remote

$ ls -R .

.: uobj1 uobj2 urbiengine-linux-remote

./uobj1:
myuobj1.cc

./uobj2:
myuobj2.cc
```

## Specifying a different host or SDK

To compile for a different host, you can use the `-H host` option. A SDK for the specified host must be installed. To specify the SDK to use, `-C sdk`.

```
$ ls
foo.cc foo.hh
$ umake --core webots

/usr/local/gostai/core/linux/libtool --tag=CXX --mode=compile g++ -O2
-pthread -I/usr/local/gostai/core/include -c foo.cc -o foo.lo g++ -O2
-pthread -I/usr/local/gostai/core/include -c foo.cc -o foo.o
/usr/local/gostai/core/linux/libtool --mode=link --tag=CXX g++ -O2
```

```
-pthread -L/usr/local/gostai/core/linux/webots -o
urbiengine-linux-webots ./foo.o
/usr/local/gostai/core/linux/webots/*.la libtool: link: warning:
library `/usr/local/gostai/core/linux/webots/liburbicore.la' was
moved. libtool: link: warning: library
`/usr/local/gostai/core/linux/webots/liburbicore.la' was moved. g++
-O2 -pthread -o urbiengine-linux-webots ./foo.o
-L/usr/local/gostai/core/linux/webots
/usr/local/gostai/core/linux/webots/liburbicore.a
-L/tmp/urbi/gostai/core/linux/webots
-L/tmp/urbi/gostai/kernel/linux/engine -L/usr/local/webots/lib
-lController

$ ls

foo.cc foo.hh foo.lo foo.o urbiengine-linux-webots
```

## Specifying the output file

The option `-o` can be used to set the output file name. It defaults to `urbiengine-HOST-CORE` when building engines, and `uobject-HOST.a` when building libraries.

```
$ ls
foo.cc foo.hh
$ umake --core webots -o urbi

/usr/local/gostai/core/linux/libtool --tag=CXX --mode=compile g++ -O2
-pthread -I/usr/local/gostai/core/include -c foo.cc -o foo.lo g++ -O2
-pthread -I/usr/local/gostai/core/include -c foo.cc -o foo.o
/usr/local/gostai/core/linux/libtool --mode=link --tag=CXX g++ -O2
-pthread -L/usr/local/gostai/core/linux/webots -o
urbiengine-linux-webots ./foo.o
/usr/local/gostai/core/linux/webots/*.la libtool: link: warning:
library `/usr/local/gostai/core/linux/webots/liburbicore.la' was
moved. libtool: link: warning: library
`/usr/local/gostai/core/linux/webots/liburbicore.la' was moved. g++
-O2 -pthread -o urbiengine-linux-webots ./foo.o
-L/usr/local/gostai/core/linux/webots
/usr/local/gostai/core/linux/webots/liburbicore.a
-L/tmp/urbi/gostai/core/linux/webots
-L/tmp/urbi/gostai/kernel/linux/engine -L/usr/local/webots/lib
-lController

$ ls
foo.cc foo.hh foo.lo foo.o urbi
```

## Passing parameters to make

All the umake options of the form `'var=value'` will be passed to make. To pass flags to the compiler and the linker, use the variables `EXTRA_CPPFLAGS` and `EXTRA_LDFLAGS`.

```
$ ls foo.cc foo.hh $ umake --core webots *.cc
EXTRA_CPPFLAGS=-I/usr/local/webots/include -o urbi -V

/usr/local/bin/umake: run. /usr/local/bin/umake: libs=''
/usr/local/bin/umake: sources=' 'foo.cc' /usr/local/bin/umake:
headers='' /usr/local/bin/umake: objects='foo.o'
/usr/local/bin/umake: make options='
'EXTRA_CPPFLAGS=-I/usr/local/webots/include
-I/home/thomas/project/liburbi-cpp/trunk/lib' OUTBIN=urbi
URBI_ENV=webots prefix=/usr/local' /usr/local/bin/umake: invoking make
-f /usr/local/gostai/core/linux/param.mk urbi
/usr/local/gostai/core/linux/libtool --mode=link --tag=CXX g++ -O2
-pthread -L/usr/local/gostai/core/linux/webots -o urbi foo.o
/usr/local/gostai/core/linux/webots/*.la libtool: link: warning:
library `/usr/local/gostai/core/linux/webots/liburbicore.la' was
moved. libtool: link: warning: library
`/usr/local/gostai/core/linux/webots/liburbicore.la' was moved. g++
-O2 -pthread -o urbi foo.o -L/usr/local/gostai/core/linux/webots
/usr/local/gostai/core/linux/webots/liburbicore.a
-L/tmp/urbi/gostai/core/linux/webots
-L/tmp/urbi/gostai/kernel/linux/engine -L/usr/local/webots/lib
-lController /usr/local/bin/umake: done.

$ ls
foo.cc foo.hh foo.lo foo.o urbi
```

## Examples

Suppose you have a module whose sources are in the current directory.

- **umake** produces **urbiengine-linux-remote**, a remote object executable
- **umake-lib -o mymodule** produces **mymodule.a**, a library that can be linked using umake to a sdk.
- **umake-engine -o urbi . libs/othermodule.a** produces **urbi**, an URBI server containing the module othermodule.a and the module made by compiling the sources in the current directory
- **umake-engine --core=aibo --host=mipsel-linux** produces **urbi**, an URBI engine for aibo which can run on the aibo host. This is the same as **umake-aibo**
- **umake-engine -H arm EXTRA\_CPPFLAGS=/usr/local/myLib/include** produces **urbiengine-arm**, an URBI engine for arm architecture containing your object, if you have the arm-engine URBI SDK installed. It will search for headers in the /usr/local/myLib/include directory.

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# Appendix A. Man page

## Name

umake -- Simplify the component's compilation chain.

<refsynopsisdivinfo>

<date>2006-29-09</date>

</refsynopsisdivinfo>

umake [--core *c*] [--host *h*] [--output *out*] [--library ] [*file...*]

## DESCRIPTION

<refsect1info>

<date>2006-28-09</date>

</refsect1info>

**umake** simplify the component's compilation chain.

## OPTIONS

--core *c*

Specify which core SDK to link with. Defaults to "remote".

--host *h*

Specify which host to compile for. Defaults to host of last installed SDK.

--library

Produces a library, does not link with any particular SDK.

*file...*

List of source files, headers libraries and directories to include. Directories are searched for sources, headers and library.

## USAGE

**umake --core=linux .**

**umake .**

**umake**

## BUGS

No bug.

## AUTHOR

Matthieu Nottale

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