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**Robot software at LAAS**  
**Solutions to “dependency hell”**

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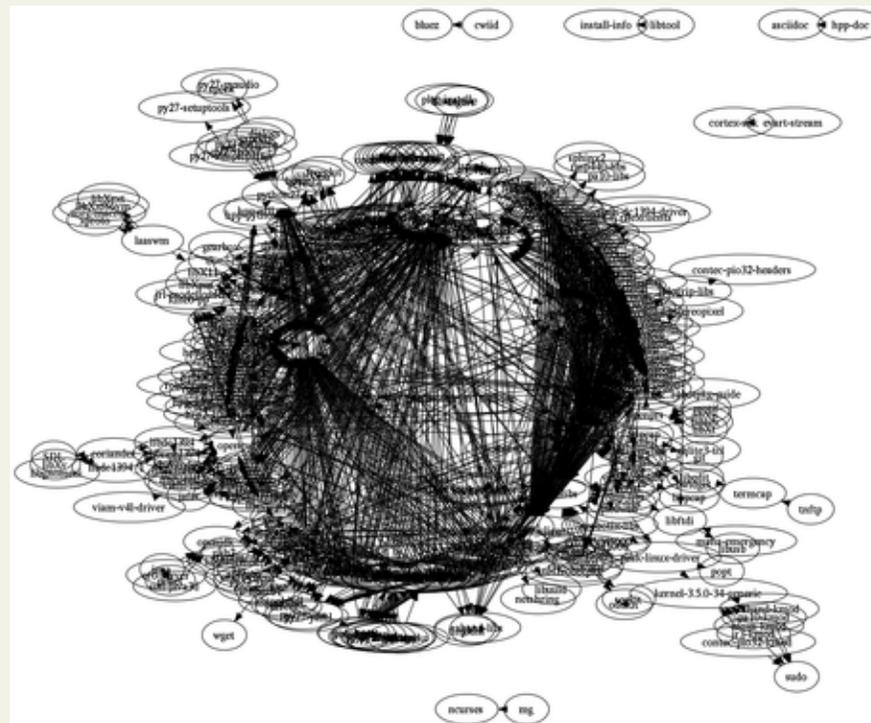
- Self hosted
  - <https://www.openrobots.org/wiki>
  - 300+ packages
- Version control
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  - git widely adopted since 2006
- As much open source (BSD license) as possible
- Trying to capitalize software

With 300 or more packages:

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E.g. some very specific version of some dependencies are required

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→ A package manager can deal with this.

→ Requires proper organization of the source code.

- Build system (autoconf, cmake, makefiles, ...)
- Code versioning

- robotpkg: Introducing packages at LAAS since 2007
- Derived from pkgsrc: <http://pkgsrc.org>
- Based on GNU-make (+ bourne shell + awk)
- No GUI: command-line tool
- Software archives independent of package management
  - Any software can be packaged

- “Source” package management
  - Software is compiled for each user locally
  - No special privilege required
- “Binary” package management
  - BSD packages (.tgz)
  - debian packages soon (.deb)
- Single click<sup>tm</sup> installation
  - Type “make update”, have a coffee.

- Regular archive installation (versioned)
- “checkout” mode: software “head”
  - Inherited from a former attempt: autoproj
- Per-package user configurable options (debug, clang/gcc, pythonX.Y, enable/disable some feature ...)
- User-defined package sets  
Handy for deployment on robots

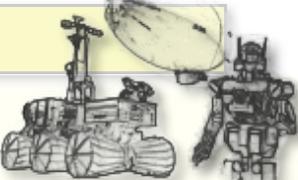
→ Not re-packaging “the world”

- “system” vs. “robotpkg” dependencies
  - Example: doxygen is a “system” package.
  - apt, yum, ... for widely available packages
- Any package can be regarded as an external dependency (a.k.a. “system”)
  - Example: boost-1.52 in robotpkg, but defaults to a “system” package.

- Automated test builds (possibly with user-defined sets)

**robotpkg - ( o ) -**

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## robotpkg bulk build results

**Summary (browse by category or all)**

Platform	Packages			Total	Date	Last update			On Air	Log
	Available	Not available	Broken (by others)			Time	Updates			
Fedora-18-x86_64	246	56	2 (1)	305	2013/06/30	22:58:50	304	Idle	<a href="#">View</a>	
NetBSD-6.0.1-x86_64	211	91	2 (0)	304	2013/06/30	23:53:11	198	65%	<a href="#">View</a>	
Ubuntu-10.04-i386	229	71	3 (1)	304	2013/06/30	23:24:32	303	Idle	<a href="#">View</a>	
Ubuntu-12.04-i386	249	52	2 (0)	303	2013/06/30	23:45:11	23	7%	<a href="#">View</a>	
Ubuntu-12.10-x86_64	246	55	2 (1)	304	2013/06/30	23:49:24	303	Idle	<a href="#">View</a>	

**Top ten offenders (browse broken packages and packages not available)**

Category	Package	Statistics			Status				
		Oldest update	Max build time	Breaks	Fedora 18 x86_64	NetBSD 6.0.1 x86_64	Status Ubuntu 10.04 i386	Ubuntu 12.04 i386	Ubuntu 12.10 x86_64
motion	sot-dynamic-2.7.2	2013/06/28	00:02:02	2	Broken	OK	OK	OK	Broken
simulation	morse-1.0.1r2~doc	2013/06/28	00:05:52	1	OK	OK	Broken	OK	OK
robots	sot-openhrp-2.5.1~hrp2-laas	2013/06/28	00:00:43	0	Broken	Broken	Broken	Broken	Broken
sysutils	tth-4.03	2013/06/30	00:01:23	0	Broken	Warnings	Broken	Broken	Broken
net	libfetch-2.33.1	2013/06/30	00:00:34	0	OK	Broken	OK	OK	OK
simulation	morse-yarp-1.0.1	2013/06/28	00:03:28	0	OK	OK	Broken	OK	OK
devel	hpp-util-0.6.0	2013/06/30	00:00:20	0	Warnings	Warnings	Warnings	Warnings	Warnings
architecture	orocos-ocl-1.10.2	2013/06/28	00:01:04	0	N/A	N/A	Warnings	Warnings	N/A

- Automated test builds (possibly with user-defined sets)  
→ Generates distributable binary packages
- Toward continuous integration
  - Each package “head” vs. released dependencies
  - Each package “head” vs. “head” dependencies
- Cross compilation ?
  - Especially for ARM targets

About 300 packages available:

- LAAS: GenoM, morse, SoT, ...
- External: ViSP, OpenCV, Orocos, YARP, ros-desktop ...

... any many more exotic packages

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- Handy tool to promote software to the outside world
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**But still a problem to convince people to version their own software appropriately**

**... No good solution so far**

- <http://robotpkg.openrobots.org>
- <mailto:robotpkg@laas.fr>

Thank you! Questions?

