



Python in Maemo

current state and future of python programming language on maemo platform

Gustavo Sverzut Barbieri



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Agenda

- 1 Current Status
- 2 Future Plans
- 3 References and Extra Resources
- 4 The End

Today

Current Status



- Is the only alternative to C
- Bindings cover most libraries provided by Maemo
- Maemo 2.0 SDK contains Python out-of-the-box (in the rootstrap)
- Still does not ship with Nokia 770/IT2006 *but we hope it will!*



What we already have

Current Status

- Python version 2.4.2
- Bindings for:
 - GTK
 - Hildon
 - libOSSO
 - DBus
 - GStreamer
 - BlueZ
 - PyGame (SDL)
 - Numeric (C optimized array operations)
- Nice tutorial already published on maemo.org

Development

Current Status



- Developed by INdT (Nokia Technology Institute, Brazil)
- Main developers are Osvaldo Santana and Rudá Moura
- Project page at <http://pymaemo.sourceforge.net>
- Still in quarantine to enter repository.maemo.org
- Temporary repository at <http://maemo.org.br/platform/apt>
- Needs community feedback!

Size Footprint

Current Status::Problems



What was done:

- Some features removed: readline from interactive prompt
- Some modules removed, most are servers.
 - See tutorial at <http://maemo.org/platform/docs/pymaemo/>
 - Still available on SDK



Size Footprint - GTK

Current Status::Problems

Still remaining problems:

- GTK wrapper (.so) is about 2MB
- Lots of calls with same prefixes... **TWICE!**
 - Make file size even bigger
 - Slow down loading process: dynamic linker uses strcmp()

Memory Footprint

Current Status::Problems



Still remaining problems:

- GTK bindings takes a lot of memory
 - many functions to wrap
 - calls every `gtk*_type()`, even unused

Processor

Current Status::Problems



- Interpreted languages are heavier than native
- No Just-in-Time compilers available
- Psycho not an option (yet?): x86, RAM-intensive, dead project
- Some modules need to be improved
- Import module is full of hacks: need to simplify



Future Plans

Future Plans

(or how you can help!)



Subsetting support

Future Plans::Development

Split components into smaller subsets, to reduce footprint.

- Need support in GTK
- Need support in PyGTK
- Other components as well (PyGame, Numeric, ...)

Python Improvements

Future Plans::Development



Guido never cared about performance that much!

- Improve `import` module
- Profile CPython
- Rewrite some modules/hot-paths in C

More bindings!

Future Plans::Development



- Improve existing bindings
- Fill missing gaps
- Add missing bindings

We want to enable everything to be written in Python!



- Python compiler written in Python
- Easy to implement new ideas
- Various backends, like Javascript and LLVM

LLVM — Low Level Virtual Machine

Future Plans::Research



- Uses SSA (Single Static Assignment)
- Many Optimizations, ie: inter-module-optimization
- Excellent code
- Apple is pushing it into GCC (middle/backend replacement)
- Can work as JIT — Just in Time compiler

References

References and Extra Resources::References



- PyMaemo: <http://pymaemo.sourceforge.net/>
- PyMaemo Tutorial:
<http://maemo.org/platform/docs/pymaemo/>
- Eagle: <http://www.gustavobarbieri.com.br/eagle/>
- Tapioca-VoIP: <http://tapioca-voip.sourceforge.net/>
- Easy Tapioca: http://code.gustavobarbieri.com.br/playground/easy_tapioca/

Thanks!

The End::Thanks!



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Gustavo Sverzut Barbieri

Email: gustavo.barbieri@indt.org.br

Website: <http://www.gustavobarbieri.com.br>

ICQ: 17249123

MSN, Jabber: barbieri@gmail.com

This presentation is available at:

http://palestras.gustavobarbieri.com.br/python_in_maemo/