Medical imaging using Debian
How Debian Med could enhance your medical imaging experience

Andreas Tille & Mathieu Malaterre

Debian

1 Intro into Debian Med
   - History
   - Blends
   - Graphing Debian Med

2 Medical imaging using Debian
   - Imaging applications
   - Developing applications for medical imaging
   - Demonstration

3 Summary
History @ LSM 2001, Bordeaux
History @ LSM 2001, Bordeaux
What is Debian Med?

practice management system

Debian Pure Blend for medical care and microbiological research
Debian Med focusses on Health Care applications
Top 10 Uploaders of Debian Med team

- Andreas T  762
- Charles P  426
- Steffen M  301
- Mathieu M  159
- Steve M. R  99
- Aaron M. U  84
- Thorsten A  48
- Laszlo K  41
- Dominique B  38
- Olivier S  38
Top 10 People discussing on Debian Med mailing list

Andreas T 3136
Charles P 1135
Karsten H 488
Mathieu M 378
Steffen M 376
David P 315
Olivier S 226
Nelson A. de O 191
Sebastian H 171
Yaroslav H 147
Top 10 bug hunters of Debian Med packages

Andreas T 300
Charles P 157
Mathieu M 87
Steve M. R 52
Olivier S 45
Aaron M. U 33
Steffen M 28
Dominique B 25
Philipp B 13
Nelson A. de O 10
# Top 10 committers to Debian Med VCS

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Commits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Andreas T</td>
<td>3810</td>
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<td></td>
<td>Charles P</td>
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<td></td>
<td>Mathieu M</td>
<td>1270</td>
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<tr>
<td></td>
<td>Steffen M</td>
<td>975</td>
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<td>David P</td>
<td>538</td>
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<tr>
<td></td>
<td>Olivier S</td>
<td>516</td>
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<tr>
<td></td>
<td>Steven M. R</td>
<td>411</td>
</tr>
<tr>
<td></td>
<td>Aaron M. U</td>
<td>266</td>
</tr>
<tr>
<td></td>
<td>Laszlo K</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>Thorsten A</td>
<td>184</td>
</tr>
</tbody>
</table>
Number of Packages in selected tasks
Healthy growth

- After some stagnation in the beginning growth in all measures
- Warning: Also the amount of own work is growing (even if work is split on more shoulders)
- Trying to attract even more upstream developers because these are the experts (*Mentoring of Month (MoM)*)
- Making Debian (Med) so attractive that users in medical care can not resist using it
Types of imaging applications

- Medical image viewers for general practitioners
ginkgocadx | aeskulap | amide | dicomscope
- Bioimaging, volume rendering
gofigure2, imagevis3d, itknap, volview
- Neurology
ants, caret, fslview, mrtrix, voxbo
- Tomography
ctsim, odin, plastimatch
- Scanning Probe Microscopy
gwyddion
- Image analysis / Simulation
slicer, sofa-apps
- Image format conversion tools (DICOM, MINC, NIfTI)
biosig-tools, dicom3tools, medcon, mricomvert
Example: ginkgocadx

Medical Imaging Software and complete DICOM Viewer providing a complete DICOM viewer solution with advanced capabilities and support for extensions.

- Easy and customisable interface through profiles.
- Full featured DICOM image visualisation.
- Multiple modalities support (Neurological, Radiological, Dermatological, Ophthalmological, Ultrasound, Endoscopy, ...)
- Dicomization support from JPEG, PNG, GIF and TIFF.
- Full EMH integration support: HL7 standard and IHE compliant workflows.
- PACS Workstation (C-FIND, C-MOVE, C-STORE...)
- Extensible through custom extensions
Several development libraries

- **General**
  - cimg-dev, gmic, libcvc-dev, libvtk5-dev

- **Biomedical data manipulation**
  - libbiosig-dev, libgdf-dev

- **Image format creation and conversion**
  - libmdc2-dev, libminc-dev, libnifti-dev

- **Specialised application development:**
  - Image-guided surgery: Libigstk4-dev
  - Registration and segmentation:
    - libinsighttoolkit3-dev
  - Solving EEG and MEG problems: libopenmeeg-dev

- **Programming languages:** Python, C, C++, C#
People behind medical imaging packages

- NeuroDebian team
- Experts dealing with medical imaging in daily practice
- General Debian developers (like me)
Goal

- Integrate all Free Software with relevance for medical imaging into Debian
- Contact to upstream developers of such applications
- Support for users of these applications
- Debian Med as missing link between users and upstream developers
This talk is available at
http://people.debian.org/~tille/talks/
Andreas Tille <tille@debian.org>