Debian: a Free Operating System
and its Relationships with the Outer World

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Free Software, raw

> *foo* is cool, let's install it!

1. download foo-1.0.tar.gz
   - checksum mismatch, missing public key, etc.
2. ./configure
   - error: missing bar, baz, ...
3. foreach (bar, baz, ...) go to 1
   until (recursive) success
4. make
   - error: symbol not found
5. make install
   - error: cp: cannot create regular file /some/weird/path

now try scale that up to 17'000 sources releasing 3'000 new
versions/month

Free Software, à point: distributions
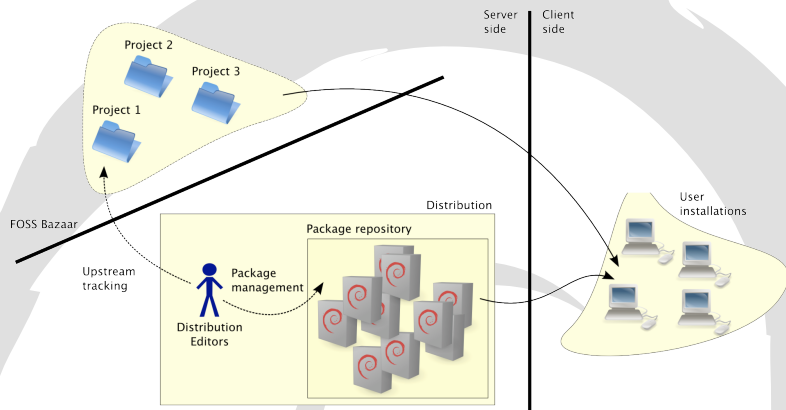
- ease software management
- key notion: the package abstraction
- offer coherent software collections
- killer application: package managers (& installers)

Outline

Debian: once upon a time

Fellow Linuxers,
This is just to announce the imminent completion of a brand-new Linux release, which I'm calling the Debian Linux Release. [...]

Ian A Murdock, 16/08/1993
`comp.os.linux.development`

- make GNU/Linux competitive with commercial OS
- easy to install
- built collaboratively by software experts
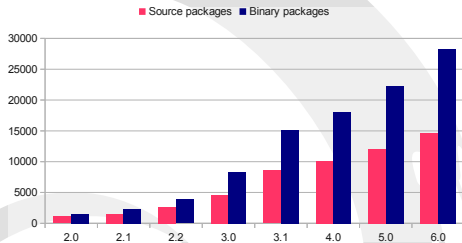- 1st major distro developed "*openly in the spirit of GNU*" FSF-sponsored for a while

$\frac{1}{3}$ of Debian: the operating system

flagship product: Debian stable

- binary distribution
- completely Free (DFSG)
- released every 24 months ($\approx$)
- a dozen architectures
  - with several kernels(!)
- archive-wide security support (3-3.5 years)

one of the largest Free Software porting platforms

renowned for

ports, stability, packaging system, old hw support, documentation, smooth upgrades, i18n/l10n, the testing suite, runs anywhere, technical policy, package choice, . . .

Debian 6.0 "Squeeze" — looking back

- release: February 2011
- dependency-based boot system (faster, more robust)
  - completely Free Linux kernel, firmware included
- GNU/kFreeBSD
- improved debian-installer
  - ext4, btrfs
  - ZFS (on kFreeBSD)
  - ease complex setups e.g. LVM + RAID + encryption
- Debian Pure Blends
  - Debian Edu, Debian Med, Debian GIS, DebiChem, . . .
 - blends.alioth.debian.org
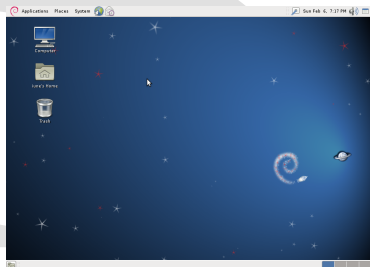
new services:
- snapshot.debian.org
- backports.debian.org
- stable-updates
- screenshots.d.net
- ask.debian.net

Debian 7.0 "Wheezy" — looking forward

- multiarch
  proper technical way of sharing
  packages across archs
  - ▶ 3rd party software, easily
  - ▶ cross-compilation
- private cloud deployment
  - ▶ OpenStack, Xen/XCP, . . .
- public cloud support
  - ▶ EC2, Azure, . . .
- new archs: armhf, s390x
- desktop: GNOME 3.4, KDE
  Plasma 4.8, XFCE, . . .
- upgrades throughout the archive
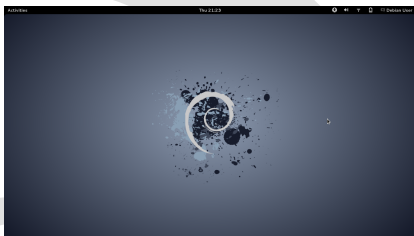
Timeline
- freeze: June 30th, 2012
- release: *when it's ready*™
  ETA: Q4 2012 – Jan 2013

Common goal:

Create the best, Free operating system.

Debian Social Contract (1997)

- 100% Free Software
- give back
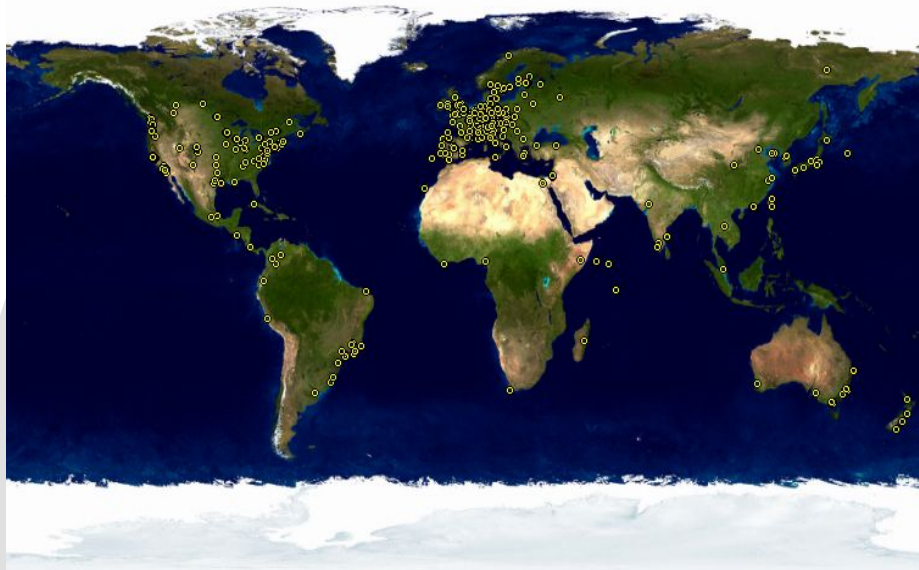- don't hide problems
- priorities: users & Free Software

Debian Constitution (1998)

Structures and rules of a Free-Software-compatible democracy

Strong motive to join: ≈ 1'000 project members, world-wide

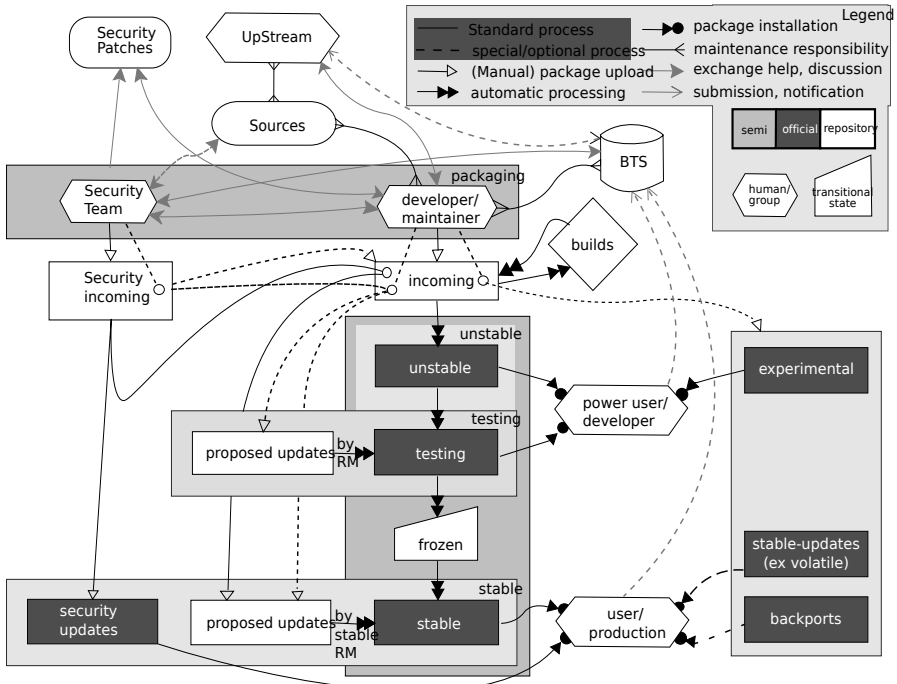# $\frac{1}{3}$ of Debian: the community

Open development
- we don't hide problem
- easy to have an impact (just "show me the code!")

Large amounts of communication
- mailing lists
- IRC
- (a few) Web services(, growing)
  - social: @debian, !debian on identi.ca

Large number of tech-savvy users
- users help each other, contribute patches, get involved

Legend

Standard process	package installation	
special/optional process	maintenance responsibility	
(Manual) package upload	exchange help, discussion	
automatic processing	submission, notification	

semi / official / repository

human/group

transitional state

Security Patches

UpStream

Sources

BTS

packaging

Security Team

developer/maintainer

Security incoming

incoming

builds

unstable

unstable

proposed updates — by RM

testing

power user/developer

experimental

frozen

security updates

proposed updates — by stable RM

stable

user/production

stable-updates (ex volatile)

backports

What's so special about Debian?

There are 300+ *active* distributions (distrowatch)
What's so special about Debian? Why should you care?

- package quality
- freedom
- independence
- decision making
- a distro with (several) downstreams

What's so special about Debian?

There are 300+ *active* distributions (distrowatch)
What's so special about Debian? Why should you care?

1. package quality
   - policy (design + testing)
   - maintainers are experts of the sw they package
   - no 2nd class packages, all are equal
2. freedom
3. independence
4. decision making
5. a distro with (several) downstreams

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1. package quality
2. freedom
   - rooted in Free Software principles
   - an important "political" actor in Free Software
   - free the bottom up, dogfooding
3. independence
4. decision making
5. a distro with (several) downstreams

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What's so special about Debian? Why should you care?

1. package quality
2. freedom
3. independence
   - no (single) company babysitting us
   - donations
   - volunteers, gift-economy
4. decision making
5. a distro with (several) downstreams

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4. decision making
   - do-ocracy & democracy
   - no imposed decision
   - "show me the code" discipline
5. a distro with (several) downstreams

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3. independence
4. decision making
5. a distro with (several) downstreams
   - derivatives!

Outline

Interlude — derivatives how to

Free Software 101

Freedom #0, to run the program, for any purpose
Freedom #1, to study how the program works, and change it
Freedom #2, to redistribute copies
Freedom #3, to improve the program, and release improvements

When applied to distros: derived distributions, AKA derivatives

How?
1. take existing packages and add your extras
2. patch & rebuild packages as needed
3. sync periodically

Derivatives are game changers

Derivatives have changed the way in which distros are made
- derivatives' focus is on customization
- people power is needed "only" for that

everybody wins (if done properly)
- derivative: massive reuse of packaging work
- "mother" distro: reach out to new public
  - users *and* contributors

Debian derivatives

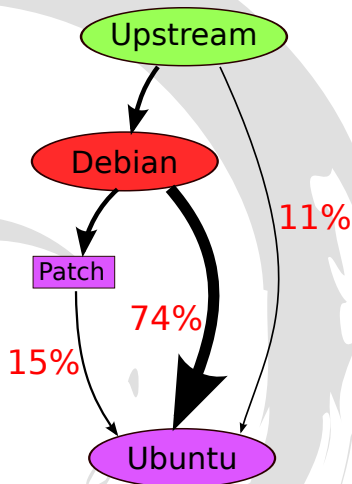Debian: a base for ≈140 <u>active</u> derivatives   — distrowatch.com

- Tucunare, LinEx, Inquisitor, Grml, UniventionCorporateServer, Vanillux, Emdebian, Crunchbang, PureOS, StormOS, Ubuntu, GNUSTEP, gNewSense, Debathena, Maemo, LMDE, SPACEflight, BCCD, Bayanihan, semplice, ArchivistaBox, Knoppix, Tails, BlankOn, AlienVault-OSSIM, DoudouLinux, Vyatta, Symbiosis, VoyageLinux, Lihuen, LinuxAdvanced, Aptosid, Canaima, siduction, ZevenOS-Neptune, BOSSlinux, Parsix, AstraLinux, ProgressLinux, Finnix, SprezzOS, CoreBiz, Epidemic-Linux, MetamorphoseLinux , . . .

    Why?
- quality & licensing assurances
- solid base system
- huge package base
- the "*universal* OS", perfect for customizations

A Debian derivative example: Ubuntu

- started in 2004 by Canonical
  target: desktop
- Debian derivative
- very popular (15–20x Debian?)
- historical/past correlations

  main ↔ corporate
  universe ↔ community

  - ▸ heavily customized/forked in main
  - ▸ very close to Debian elsewhere
- sprouting its own derivatives (≈80)
  - ▸ ... as Debian *transitive* derivatives

Data for Oneiric Ocelot, main + universe

Do you Debian?

- Ubuntu appears to be the most customized Debian derivative
- other derivs. ⇒ much larger amount of *pristine* Debian packages

Tucunare, LinEx, Inquisitor, Grml, UniventionCorporateServer,
Vanillux, Emdebian, Crunchbang, PureOS, StormOS, Ubuntu,
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ProgressLinux, Finnix, SprezzOS, CoreBiz, Epidemic-Linux,
MetamorphoseLinux , Debian, Xubuntu, Linux Mint, Ubuntu
Studio, Mythbuntu, ArtistX, Asturix, Peppermint OS, TurnKey
Linux, Kubuntu, Caixa Mágica, Lubuntu , . . .

if you are running a Debian (transitive) derivative, chances are you
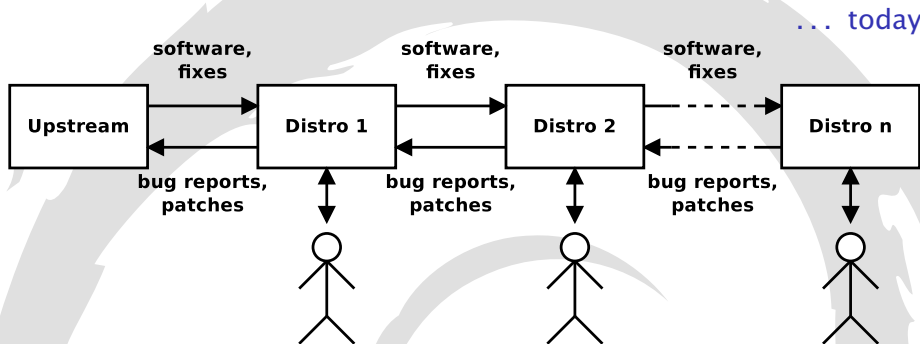heavily depend on Debian and on its well-being

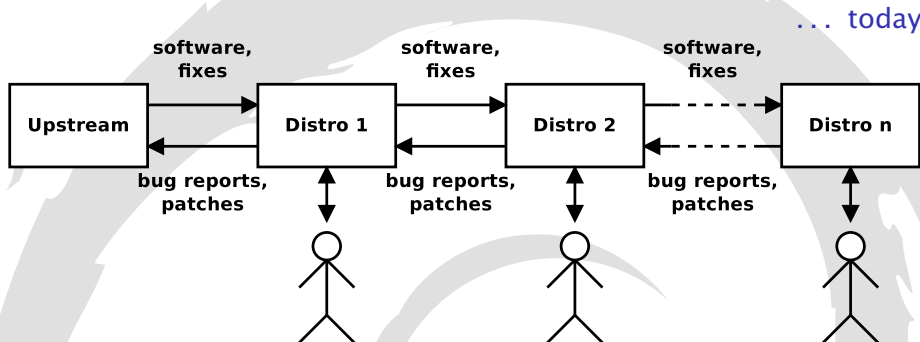*even if your distro hasn't told you*

The distribution pipeline

yesterday . . .
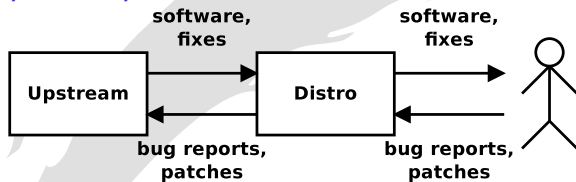
The *new* distribution pipeline

The *new* distribution pipeline

... today

Huge potential!

- Free Software spreads
- more eyeballs swallow more bugs
- more potential contributors

Outline

On doing business with "open source"

We now have a body of software accessible to everybody on earth so robust and so profound in its possibilities, that we are a few man months away from doing whatever it is that anybody wants to do with computers all the time.

— Eben Moglen, speech at Harvard Law School

The question is no longer whether Open Source makes sense [for business], *but when and how best to use Open Source to pursue business objectives.*

— Bdale Garbee, LCA 2009

- what are the typical Debian ↔ business interactions?
- what are the community expectations?

Note: general FOSS wisdom, mostly non Debian-specific & reusable

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Level 1 — *using* Debian in your business

- no doubt about viability

> *Debian is now the most popular Linux distribution on web servers*   *[29.4% of FOSS, 9.6% of total]*
>
> — w3techs.com, *January 2012*

- usual advantages of FOSS: no lock-in, zero license cost, . . .
- you will need *trained* personnel, do not improvise
  - ▸ consider hiring Debian Developers and Debian Consultants see http://www.debian.org/consultants/
  - ▸ encourage your personnel to *become* Debian Developers
  - ▸ a direct link with the Debian community will give you an edge

Expectations

- none, just go ahead

    we do this for everyone, after all

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But you *can* do more!
. . . and incrose your company's "karma" before the community as a
result

- be a good FOSS citizen
- let developers know you use their software
- sponsor community events
- have your own software packaged

But you *can* do more!
. . . and incrose your company's "karma" before the community as a result

- be a good FOSS citizen
  - ► report bugs
  - ► submit patches
  - ► . . .
- let developers know you use their software
- sponsor community events
- have your own software packaged

Level 1 — *using* Debian in your business (cont.)

But you *can* do more!
. . . and incrose your company's "karma" before the community as a result

- be a good FOSS citizen
- let developers know you use their software
  - ▸ contribute to community motivation
  - ▸ a basin of future employees?
- sponsor community events
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Level 1 — *using* Debian in your business (cont.)

But you *can* do more!
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- be a good FOSS citizen
- let developers know you use their software
- sponsor community events
  - ▸ promote your company to a hacker public
  - ▸ conferences
    e.g. http://debconf13.debconf.org, Switzerland
  - ▸ focused development events
- have your own software packaged

Level 1 — *using* Debian in your business (cont.)

But you *can* do more!

. . . and incrose your company's "karma" before the community as a result

- be a good FOSS citizen
- let developers know you use their software
- sponsor community events
- have your own software packaged
  - ▶ pro: reputed distribution channel
  - ▶ . . . that integrates with your deployment work-flow
  - ▶ con: won't happen automagically

Level 2 — *build* a Debian-based businesses

- low investment: consulting, architect, design, . . .
  - ▸ cross over to the other side!
  - ▸ examples: too numerous :-)
  - ▸ why Debian? independence (!), customization, . . .

- higher investment: customize Debian for specific needs
  - ▸ blend / custom distro / derivative / . . .
  - ▸ examples: Canonical, EDF, country-based distros for PAs, . . .
  - ▸ start from blends, do a derivative if needed

Expectations

- give credit
  - communities thrive on motivation
  - if you depend on their work, keep them healthy!
- give back . . .

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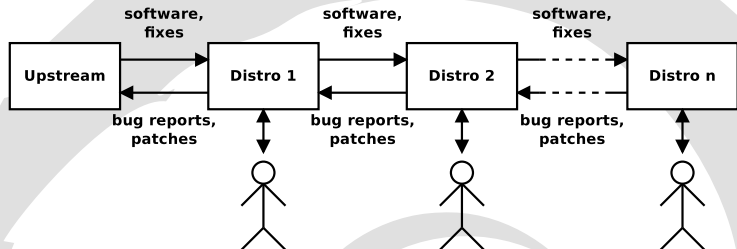# Level 2 — *build* a Debian-based businesses

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- communities motivated by Free Software ethics consider "Free Software success" more important than their own success
- they want a sustainable ecosystem, where everyone contributes
- they expect participants to push changes upstream
  - ▸ pro: offloading maintenance
  - ▸ con: requires efforts

Thanks!

Questions?

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http://upsilon.cc/zack
http://identi.ca/zack