How to customize free software?

The Custom Debian approach, and some possibilities
in large-scale computing

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19 slides

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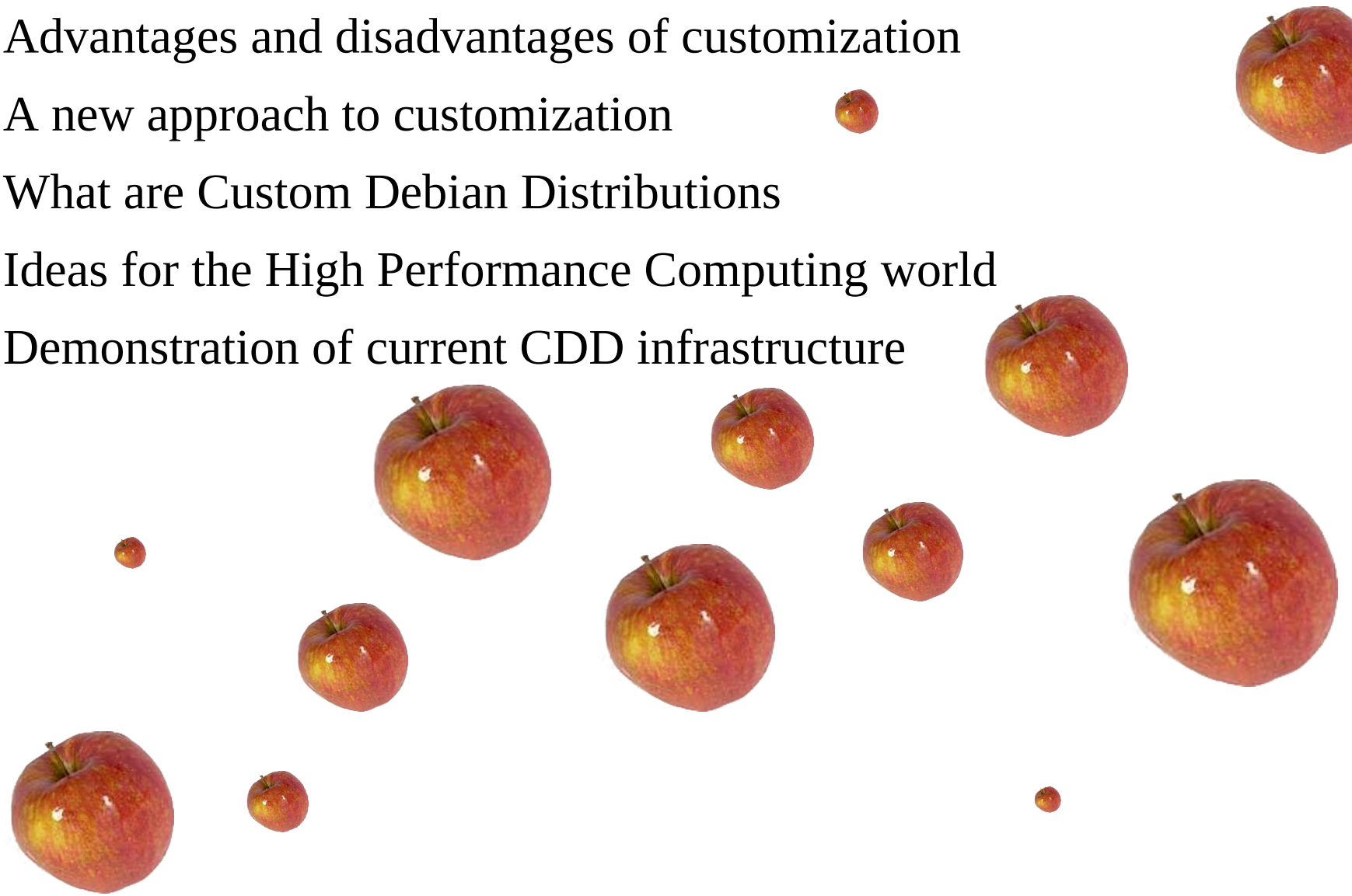
What I'll be talking about

1) Advantages and disadvantages of customization
2) A new approach to customization
3) What are Custom Debian Distributions
4) Ideas for the High Performance Computing world
5) Demonstration of current CDD infrastructure



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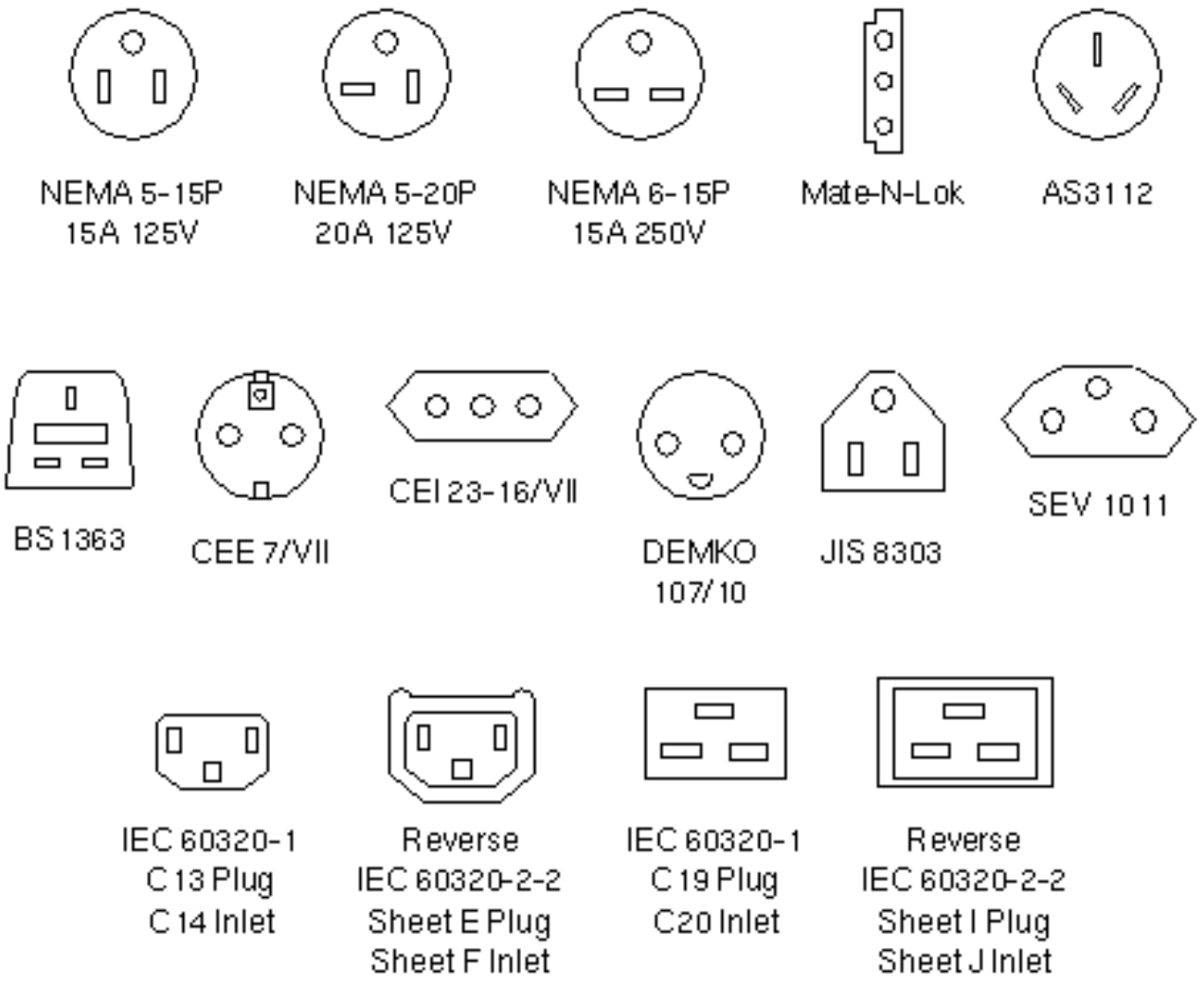
Customization



Everyone has different needs.

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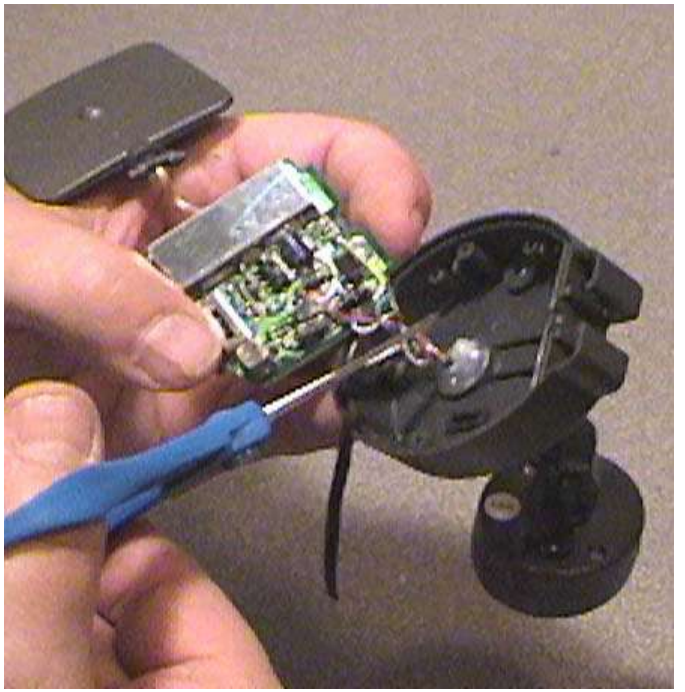
Advantages of customization

Software is more appropriate and more efficient

- It has less unneeded functionality
- It is easier to document and support
- It requires less time to be adapted
- It can have a specialised user community
- It can talk a specific language or jargon
- It does what **you want right after you install it**
- **Even the installer does what you want :)**



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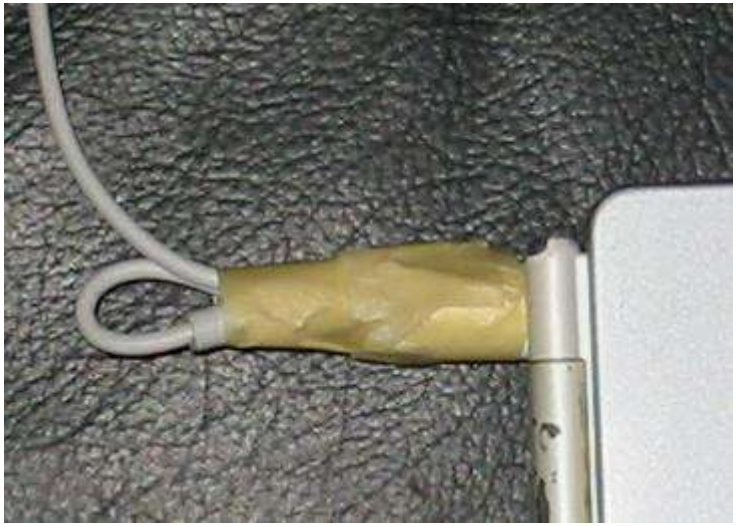
Problems of customization

Customized software has a higher cost

- Know-how is harder to find
- Support is harder to find
- The development community is smaller
- There may not be enough resources to develop it further
- One-time costs are shared by a smaller number of entities

The main cause of these problems is divergency from mainstream development



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Advantages without disadvantages

With Free Software there is a way beyond the dilemma:
customization without diverging!

- Existing software can be selected to build a custom system
- Existing software can be configured to be a part of a custom system
- Existing software can be extended to include needed features
- Existing software can be made configurable to exclude unneeded features
- All of these things can be done as a part of the main developer community

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The example of Custom Debian

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Definition of CDD

Custom Debian Distributions: distributions derived from Debian which are still 100% Debian

(successful revolutions need simple ideas)

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CDD HOWTO

1) Take Debian
2) Select Packages
3) Configure Packages
4) Rule the world

Aim at being 100% policy compliant

If you need special software, package it in Debian

If you need special configurations, work with maintainers

If you need stable software, fix bugs and submit patches to the BTS

If you need translations, work with Debian translators

If you need security, work with the Debian security team

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Why it works

Various Debian-derived systems...

Progeny

Impi

Ubuntu

AGNULA

Lindows

Debian-Med

Xandros

Debian-NP

Libertade

Debian-BR-CDD

Morphix

LinEx

Adamantix

Knoppix

Debian-Edu

[this place is for you!]

...can coexist inside Debian!

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First magic of CDDs

Once you cooperate with Debian

You cooperate with all the others

(successful revolutions are made by lazy revolutionaries)

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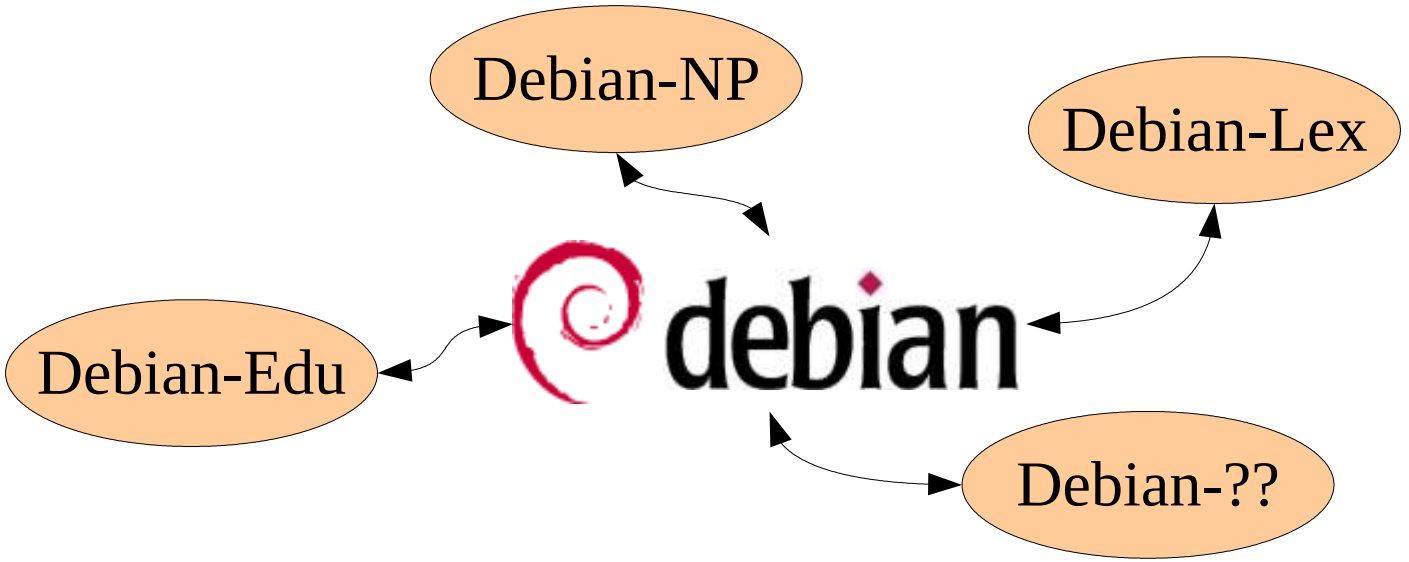
Custom Debian

Who makes Custom Debians contributes to Debian, and Debian improvements contribute to all Custom Debians.

When you do Free Software, you create *externalities*. With CDDs they are collected inside Debian, where they "fermentate" using powerfully creative *network economy* processes.

Everyone drinks the wine!



Summary so far

It is possible to do customization while minimizing divergency.

- It allows to customize without losing quality and progress
- It brings you external feedback and know-how
- It increases the possibilities of innovation
- It can put you in touch with groups with the same needs for customization

This has many advantages, but it may require some changes on how we work

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HPC Customization ideas

HPC centres normally work with customized software. Minimizing divergency can be a key for reducing system obsolescence.

However, HPC centres normally have local teams which are not motivated in losing time to network with external developer communities.

I will present a quick round of opportunities in applying the CDD customization way to HPC centers

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Having a community mediator

It is hard to ask every member of the team to stay networked with the developer community. However, it may make sense to have someone in the team taking care of this interaction.

- It would be helpful for keeping the software updated and in-line with new development
- It would constantly bring in new know-how
- It would keep the project networked with similar groups
- It would be helpful for creating synergies

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Creating a CDD

The group could create a Custom Debian Distribution using their package selection and configuration.

- It would not be useful for installing the cluster machines (DRBL or FAI already do this job much better for large systems)

However:

- It would save time if the master system is installed or reinstalled frequently
- It could create a specialized community around the system, distributing maintainance and development task among a larger group

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Distributing in Debian

Locally created software can be distributed as part of Debian:

- It would bring it to a wider audience making it more useful
- It would bring it to a wider audience making it more tested
- Having experience in these packaging and distribution practices can be the key to deploying SETI@Home-like grid computing software