

Designing with & for developers

How user experience landed in  openembedded

yocto
PROJECT

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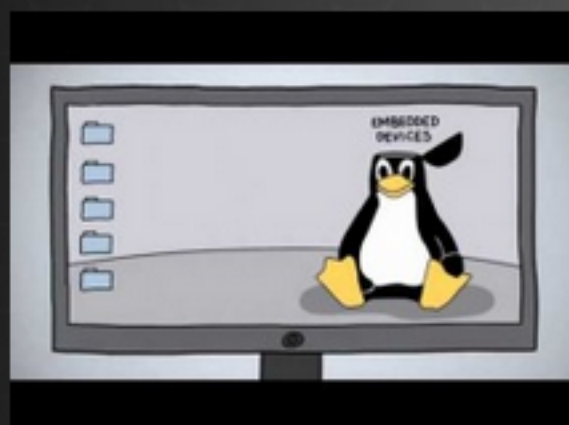
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Introducing the Yocto Project

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Go



It's not an embedded Linux distribution – it creates a custom one for you

The Yocto Project is an open source collaboration project that provides templates, tools and methods to help you create custom Linux-based systems for embedded products regardless of the hardware architecture. [Read more](#)

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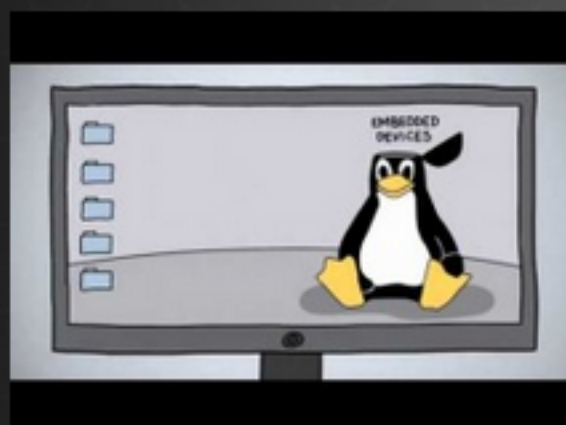
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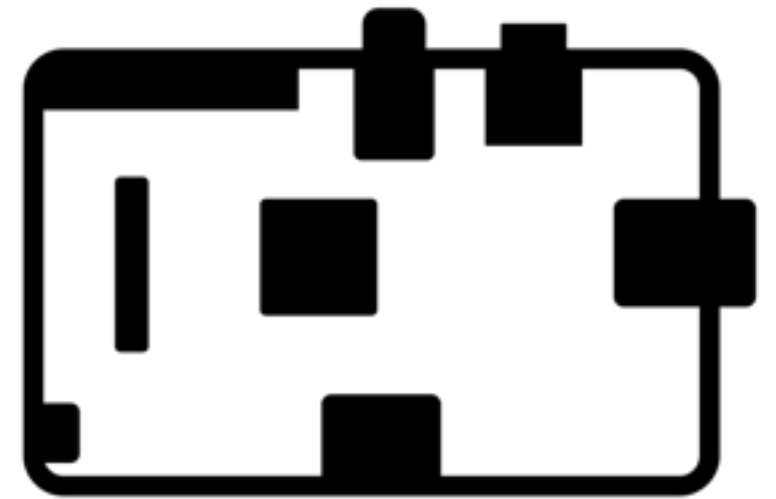
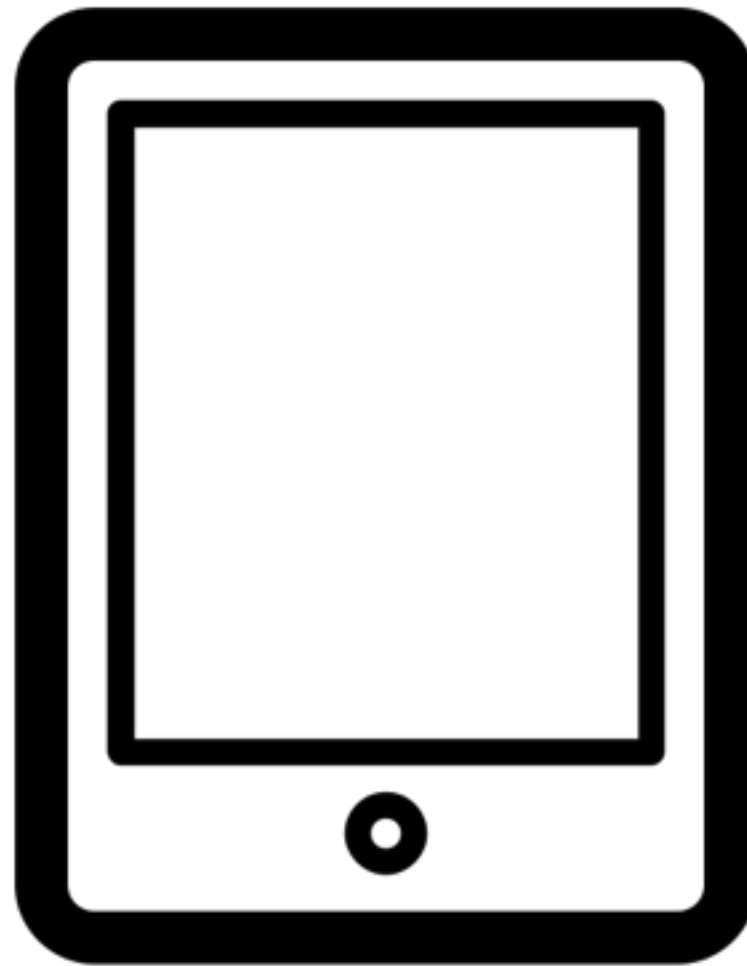
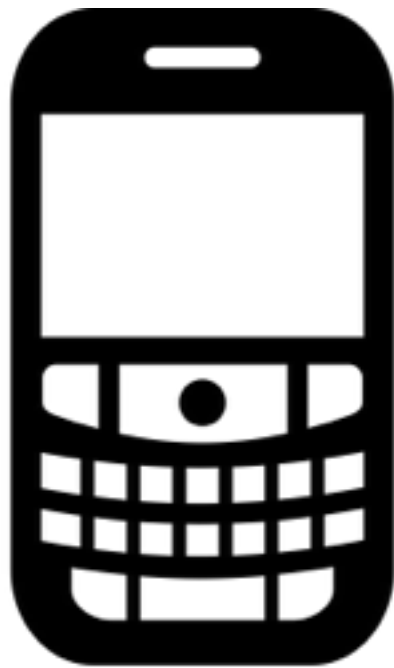
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Making custom Linux distributions for embedded computers



yocto
PROJECT

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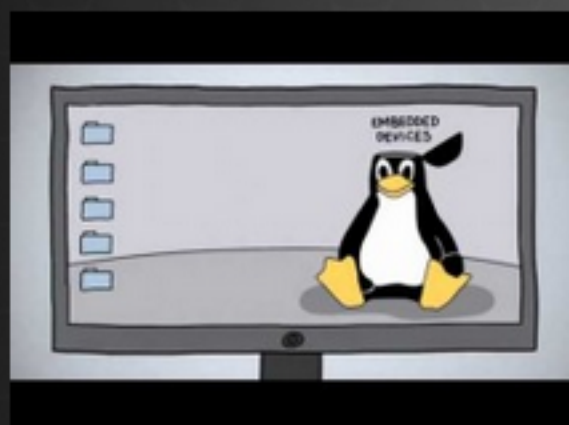
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Build system



- Navigation
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Welcome to OpenEmbedded

Welcome to **OpenEmbedded**, the build framework for embedded Linux. **OpenEmbedded** offers a best-in-class cross-compile environment. It allows developers to create a complete Linux Distribution for embedded systems. Some of the OpenEmbedded advantages include:

- adopted as the build system for the [Yocto Project](#) in March 2011.
- support for many hardware architectures
- multiple releases for those architectures
- tools for speeding up the process of recreating the base after changes have been made
- easy to customize
- runs on any Linux distribution
- cross-compile 1000's of packages including GTK+, Qt, the X Windows system, Mono, Java, and about anything else you might ever need

Recent News:

- **2015-01-8:** OpenEmbedded will have a stand at [FOSDEM 2016](#) in Brussels. See you there!
 - **2015-10-9:** OpenEmbedded will have a developers meeting [OEDAM 2015](#) in Dublin. See you there!
 - **2015-03-27,28:** OpenEmbedded will have a developers meeting [OEDAM 2015](#) in San Jose. See you there!
- See [News Archive](#) for older news.

Users

- [Getting started](#)
- [Frequently asked questions](#) and their answers
- [Documentation](#)
- [More](#)

Developers

- [Policies](#)
- [Debugging a build](#)
- [OpenEmbedded-Core](#)
- [2011.3 Release](#)
- [Organization](#)





yocto@icarus:~\$

```
home/poky/build/tmp/deploy/images/raspberrypi2/
```


home/poky/**build/tmp/deploy**/images/raspberrypi2/

home/poky/**build**/**tmp**/**deploy**/images/raspberrypi2/

tmp WTF !



Choose a base template


openSUSE Leap 42.1

- ☒  **Just enough OS (JeOS)**
Tiny, minimalistic appliances
- ☐  **KDE 4 desktop**
openSUSE Leap 42.1 KDE 4
- ☐  **Server**
A text-only base
- ☐  **Import**
Use Kiwi or AutoYaST configuration file
- ☐  **GNOME desktop**
openSUSE Leap 42.1 GNOME



openSUSE 13.2

- ☐  **Just enough OS (JeOS)**
Tiny, minimalistic appliances
- ☐  **KDE 4 desktop**
openSUSE 13.2 KDE 4
- ☐  **Server**
A text-only base
- ☐  **Import**
Use Kiwi or AutoYaST configuration file
- ☐  **GNOME desktop**
openSUSE 13.2 GNOME

SUSE Linux Enterprise 12 SP1

- ☐  **Just enough OS (JeOS)**
Minimal SLES 12 SP1
- ☐  **Import**
Use Kiwi or AutoYaST configuration file
- ☐  **Server**
SLES 12 SP1
- ☐  **GNOME desktop**
SLED 12 SP1 GNOME

SUSE Linux Enterprise 12

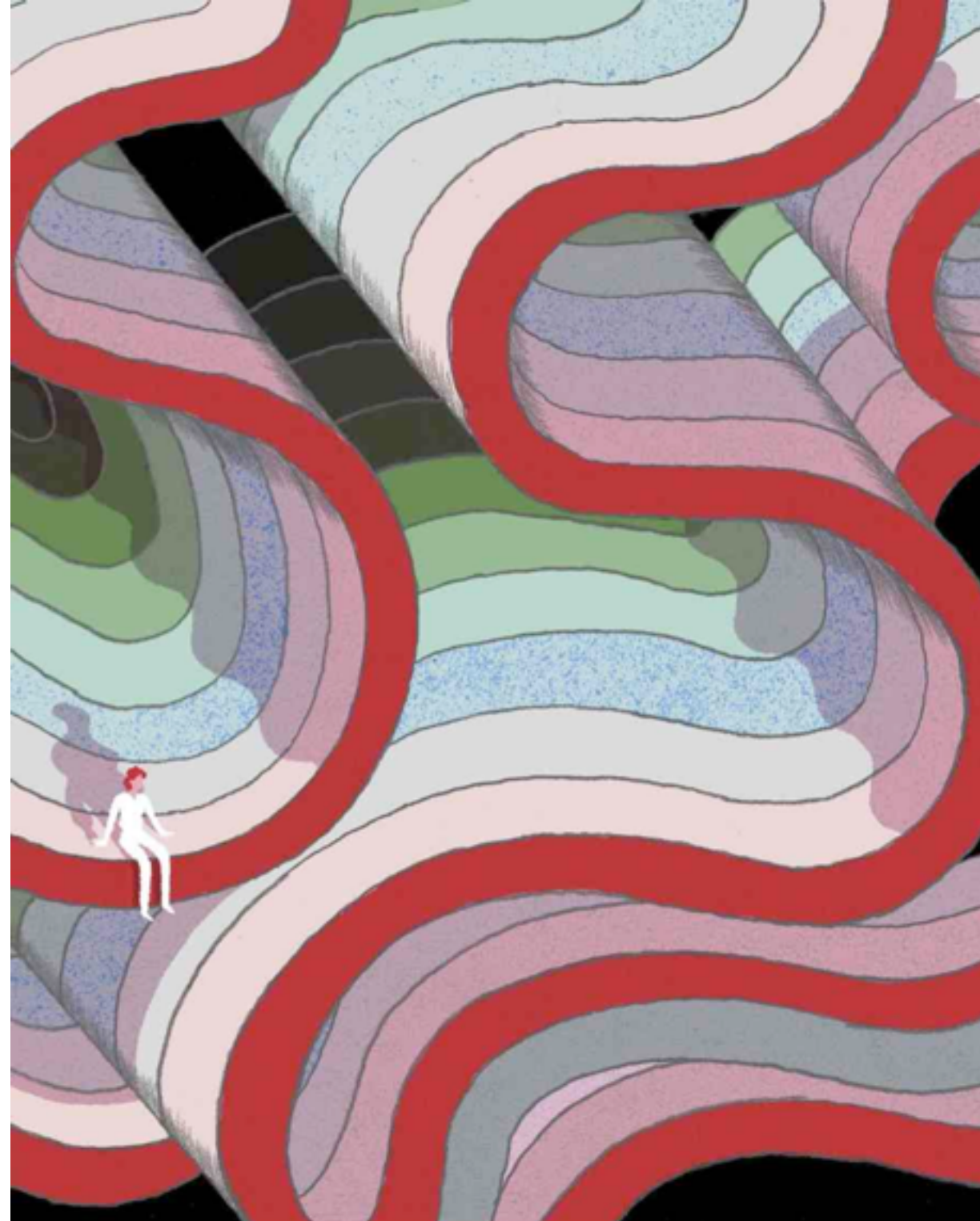
- ☐  **Just enough OS (JeOS)**
Minimal SLES 12
- ☐  **Server**
SLES 12
- ☐  **GNOME desktop**
SLED 12 GNOME

“I saw a demo of Suse Studio when I was in Vancouver (...) It did have a really nice, smooth sort of feel to it and a lot of thought had been put into how the user interface interacted with people.

I was with a couple of other people from the Yocto Project, and we looked at it (...) We dream of having a user interface that looks a bit like that. “

The cry for design
came from within

"I am the only designer
in something called
the Yocto Project"



THE USER EXPERIENCE TEAM OF ONE

A Research and Design Survival Guide

by **Leah Buley** Foreword by Stephen Anderson

 Rosenfeld

The OpenEmbedded maintainers are ...

The OpenEmbedded maintainers are ...

my domain experts

The OpenEmbedded maintainers are ...

my domain experts

my development team

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

part of my user base

with and for

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

part of my user base

When designers have
insufficient domain
knowledge,
their designs suck

Paul Eggleton



Ask questions

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

part of my user base

fussy b#*%#@#!

Don't tell me,
show me

This is Toaster

A web interface to [OpenEmbedded](#) and [BitBake](#), the [Yocto Project](#) build system.

To start building, create your first Toaster project

[Read the Toaster manual](#)

[Contribute to Toaster](#)

yocto PROJECT Toaster Toaster manual

Recent builds

core-image-sato (+3) qemux86	ETA: 16:34
core-image-sato atom-pc (15:22)	4 warnings Build time: 00:36:55
core-image-x11 qemux86 (12:01)	3 errors 10 warnings Build time: 00:27:45

All builds

Search builds Search Edit columns Show rows: 10

Outcome	Target	Machine	Completed on	Errors	Warnings	Output
	core-image-sato	atom-pc	11/06/13 at 15:22		4 warnings	ext3, hddimg, iso, tarbz2
	core-image-x11	qemux86	11/06/13 at 12:01	3 errors	10 warnings	
	core-image-sato	atom-pc	11/06/13 at 11:54		4 warnings	ext3, hddimg, iso
	busybox	qemux86-64	04/12/13 at 10:06			
	busybox	qemux86-64	04/12/13 at 09:58			
	image-core-image-sato	image-x86	11/06/13 at 11:16			ext3, hddimg

Latest project builds					
core-image-clutter		Build queued			Cancel
custom-image-name	10:42		4 warnings	Build time: 00:36:55	Run again
core-image-sato	11/07/13 12:01	1 error	10 warnings	Build time: 00:03:45	Run again
openssl	11/07/13 09:29			Build time: 00:36:55	Run again

When you click the 'cancel' button

What happens when you click the 'Cancel' button

When you click the 'cancel' button for a build in progress:

1. We first show you a cancelling state: we replace the message ('Build queued', 'Checking out layers'), or the progress bar, with the string 'Cancelling the build', and fade out the 'Cancel' button

The cancelling state is shown for a minimum of 2 seconds, and, after that, for as long as it takes for the build to actually stop.

2. Once the build stops, we replace the cancelling build with a cancelled build.

A cancelled build has:

- the target name(s), which are not clickable
- a 'run again' button, and
- the string: "Build cancelled".

The 'run again' button of a cancelled build does the same as any other 'run again' button: when you click it, we start a new build with the same target(s) as the cancelled build.

To see the interaction visit

<http://www.yoctoproject.org/toaster/project-builds.html>

Start a build using the build form in the top right of the page. When the build queued appears, click the 'cancel' button.

Latest project builds					
core-image-clutter		Cancelling the build ...			
custom-image-name	10:42		4 warnings	Build time: 00:36:55	Run again
core-image-sato	11/07/13 12:01	1 error	10 warnings	Build time: 00:03:45	Run again
openssl	11/07/13 09:29			Build time: 00:36:55	Run again

We show you the 'cancelling' state for at least 2 seconds

Latest project builds					
core-image-sato		Build cancelled			Run again
custom-image-name	10:42		4 warnings	Build time: 00:36:55	Run again
core-image-sato	11/07/13 12:01	1 error	10 warnings	Build time: 00:03:45	Run again
All project builds					

Then we display a cancelled build

And remove the last build from the list

Latest project builds

core-image-clutter	Build queued	Cancel
custom-image-name	10:42	4 warnings Build time: 00:36:55 Run again
core-image-sato	11/07/13 12:01 1 error	10 warnings Build time: 00:03:45 Run again
openssl	11/07/13 09:29	Build time: 00:36:55 Run again

Latest project builds

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- the string: "Build cancelled".

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When you click the 'cancel' button

We show you the 'cancelling' state for at least 2 seconds

ca

And remove the last build from the list

4 of 5

project-builds.html
right of the
'cancel'

Meet me
where I am

belen	15:15
here is a random question for you all. In the output of bitbake -e, do you ever look at the pre-expansion value of a variable? If so, what for?	
frsc left the room (quit: Remote host closed the connection).	15:16
ddom left the room (quit: Ping timeout: 256 seconds).	15:22
khem` left the room (quit: Quit: gone to sleep. ZZZzzz...).	15:22
neverpanic	15:23
yes, to see how a value ended up in a variable (e.g. via a different variable, etc)	
vdehors left the room (quit: Quit: Ex-Chat).	15:24
vdehors [~vdehors@bob75-2-81-56-46-209.fbx.proxad.net] entered the room.	15:24
madisox [~madison@64-71-1-115.static.wiline.com] entered the room.	15:25
rburton	15:25
belen: see, it's not just me and RP 😊	
belen	15:26
neverpanic: good to know. Thanks!	
joshuagl	15:26
belen: absolutely, yes – same usecase as neverpanic	
belen	15:26
thanks joshuagl	
mago_ [~mago@88.131.56.168] entered the room.	15:26
bluelightning [~paul@2001:8b0:258:7d7a:2ad2:44ff:fe40:9209] entered the room.	15:26
bluelightning left the room (quit: Changing host).	15:26
bluelightning [~paul@pdpc/supporter/professional/bluelightning] entered the room.	15:26
belen	15:27
rburton: fine, you win 😊	

[OE-core] [Toaster] FW: [PATCH 6/7] toaster: Update for buildstats changes

Barros Pena, Belen [belen.barros.pena at intel.com](mailto:belen.barros.pena@intel.com)

Mon Dec 21 11:34:50 UTC 2015

- Previous message: [\[OE-core\] \[Toaster\] FW: \[PATCH 6/7\] toaster: Update for buildstats changes](#)
- Next message: [\[OE-core\] \[PATCH\] flex: fix native tool problems](#)
- Messages sorted by: [\[date \]](#) [\[thread \]](#) [\[subject \]](#) [\[author \]](#)

On 18/12/2015 10:56, "Richard Purdie" <[richard.purdie at linuxfoundation.org](mailto:richard.purdie@linuxfoundation.org)> wrote:

```
>On Fri, 2015-12-18 at 09:21 +0000, Barros Pena, Belen wrote:
>> I applied the buildstats series on top of toaster-next, ran a build,
>> and
>> checked the build stats info. I can see time per task coming in. I
>> cannot
>> see cpu usage or disk i/o data in the UI because of this
>>
>> https://bugzilla.yoctoproject.org/show\_bug.cgi?id=8571
>>
>> But there is data for both in the database, and it looks sane. So I
>> guess,
>> from the UI standpoint, the patches are ok: things were as broken as
>> they
>> were before ;)
>
>Thanks Belén!
>
```

Status: NEW ([edit](#))**Product:** Maintenance Tools**Component:** Layer Index**Version:** unspecified**Platform:** PC Multiple**Importance:** Medium enhancement**Target Milestone:** 1.9 M3**Assigned To:** [Alex Franco](#) ([edit](#)) ([take](#))**QA Contact:** [Alexandru Georgescu](#) ([edit](#))**Whiteboard:** GUI design available**Depends on:** [7981](#) ([edit](#))**Blocks:**Show dependency [tree](#) / [graph](#)• [Create test case](#)**Reported:** 2015-06-08 13:27 UTC by [Paul Eggleton](#)**Modified:** 2015-07-15 13:54 UTC ([History](#))**CC List:** 2 users including you ([edit](#))**See Also:** ([add](#))**Type of Regression:** ---**Documentation change:** No (bug/feature does not impact docs)**Estimate: Person-Days**

2.0

Attachments

Design - Showing blacklisted recipes (304.78 KB application/pdf) 2015-07-15 13:54 UTC, Belen Barros Pena	<i>no flags</i>	Details
View All		

Additional Comments:

Message

**[Toaster] [PATCH] [v2] toastergui: Improve directory structurelayout**

Belen Barros Pena sent by toaster-bounces@yoctoproject.org

Sent: Wednesday, 14 October 2015 12:41

To: toaster@yoctoproject.org

This patch reduces the amount of indenting, limits the width of the 'Size', 'Permissions', 'Owner' and 'Group' columns, and sets colspan to use the white space of the symlink and package names when empty.

Signed-off-by: Belen Barros Pena <belen.barros.pena@intel.com>

```
---
bitbake/lib/toaster/toastergui/static/css/default.css | 4 ++++
.../toaster/toastergui/static/js/jquery.treetable.js | 2 +-
bitbake/lib/toaster/toastergui/templates/dirinfo.html | 18 ++++++-----
3 files changed, 16 insertions(+), 8 deletions(-)
```

```
diff --git a/bitbake/lib/toaster/toastergui/static/css/default.css b/bitbake/lib/toaster/toastergui/static/css/default.css
index cce3e31..06d9976 100644
```

```
--- a/bitbake/lib/toaster/toastergui/static/css/default.css
+++ b/bitbake/lib/toaster/toastergui/static/css/default.css
@@ -164,6 +164,10 @@ table { table-layout: fixed; word-wrap: break-word; }
/* Remove bottom margin for forms inside modal dialogs */
#dependencies-modal-form { margin-bottom: 0px; }
+/* Custom column widths */
+.narrow-col { width: 8%; }
+.medium-col { width: 12%; }
+
```

```
/* Configuration styles */
.icon-trash { color: #B94A48; font-size: 16px; padding-left: 5px; }
.icon-trash:hover { color: #943A38; text-decoration: none; cursor: pointer; }
```

```
diff --git a/bitbake/lib/toaster/toastergui/static/js/jquery.treetable.js b/bitbake/lib/toaster/toastergui/static/js/jquery.treetable.js
index 42e7427..794b902 100644
```


Hi, my name is Belén,
and it took me 2
years to learn Git

Be flexible

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

part of my user base

Recent builds

core-image-sato (+3) qemu86

ETA: 16:34

✓ core-image-sato atom-pc (15:22)

⚠ 4 warnings

Build time: 00:36:55

✗ core-image-x11 qemu86 (12:01)

✗ 3 errors

⚠ 10 warnings

Build time: 00:27:45

All builds (130)

Search builds

Search

view

Edit columns

Show rows: 10

Outcome	Target	Project	Completed on	Failed tasks	Errors	Warnings	Output
✓	core-image-sato	Learning YP	11/06/13 at 15:22			4 warnings	ext3, hddimg, iso, tar.bz2
✗	core-image-x11	Learning YP	11/06/13 at 12:01	acl_2.2.51-r3 do_configure	3 errors	10 warnings	
✓	core-image-sato	Learning YP	11/06/13 at 11:54			4 warnings	ext3, hddimg, iso
✓	busybox	Learning YP	04/12/13 at 10:08				

Trick them into
doing critique

The OpenEmbedded maintainers are ...

my domain experts

my development team

my co-designers

part of my user base

Maintainer bias



Talking to embedded application developers exposed to Yocto Project / Open Embedded

Apologies if this discussion is off topic for this group: hopefully is not (too much).

I am doing some work to better understand how embedded application developers work with the Yocto Project and Open Embedded, where things are difficult and how they... [Show more](#)

[Like](#) [Comment](#)

1 2



Vitaly Luban OpenEmbedded is an abomination. The one who invented 'bitbake' fits the description of a hacker given by Joseph Weizenbaum in "Computer Power and Human Reason: From Judgment To Calculation" in it's worst possible interpretation. Everythi... [Show more](#)

[Like](#)



1y



Alexy Rozen Absolutely agree with Vitaly. In addition to slow performance I really don't like project footprint/size. In my case complete Freescale p3041 CPU based project was around 5 G size. Now lets assume 10-20 SW engineers need to work with such project using versioned sources. It becomes very expensive and not suitable.

[Like](#)



1y



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1



2



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[Like](#)



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[Like](#)



1y



Message

**Re: [yocto] how to deploy gdbserver ?**

Valentin Le bescond

Sent: Friday, 16 October 2015 14:04

To: Barros Pena, Belen

You replied to this message on 16/10/2015 14:08.

[Show Reply](#)

Completed on Monday, 14 December 2015.

Hi Valentin,

Sorry for contacting you out of the blue. My name is Belén, and I am part of the Yocto Project team at Intel. I designed Hob (which you mentioned in a previous email), and I am now working on its successor, something we have called Toaster.

I was wondering if you would be willing to give Toaster a try to do exactly what you are trying to do: create an image for the Raspberry Pi 2 with gdb installed. We are organising a round of remote usability testing, and your Toaster trial would be part of that. It would involve giving you a URL for Toaster, and you sharing your screen with me (using Google Hangouts or Skype) and talking me through the process of building the image. The whole thing would take about 45 minutes.

Doing this kind of thing gives us information about how understandable the Toaster UI is, and what we should do to improve it.

with and for

Use your
maintainers

Credits

Cell phone icon by Andrew Forrester from the Noun Project

<https://thenounproject.com/search/?q=mobile+phone&i=1814>

Tablet icon by Arthur Shlain from the Noun Project

<https://thenounproject.com/search/?q=tablet&i=102507>

Raspberry Pi icon by Tom Medley from the Noun Project

<https://thenounproject.com/search/?q=raspberrypi&i=125960>

Flour by Malakhi Helel - CC BY-ND 2.0

<http://goo.gl/kwtpO>

Thank you!

belenbarrospena@gmail.com

@belenpena

#opensource design