



Yocto Project[®] Long Term Support (LTS) Releases

David Reyna, Wind River
Nicolas Dechesne, Linaro

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About us!



Yocto Project
Community Manager



Yocto Project
Training and Dev Day



Agenda

- Yocto Project® organisation and membership
- Current release process
- Automated testing improvements
- LTS background and overview
- How can you help?

What is the Yocto Project® ?

**IT'S NOT AN EMBEDDED LINUX DISTRIBUTION,
IT CREATES A CUSTOM ONE FOR YOU.**



The Yocto Project (YP) is an open source collaboration project that helps developers create custom Linux-based systems regardless of the hardware architecture.

The project provides a flexible set of tools and a space where embedded developers worldwide can share technologies, software stacks, configurations, and best practices that can be used to create tailored Linux images for embedded and IOT devices, or anywhere a customized Linux OS is needed.

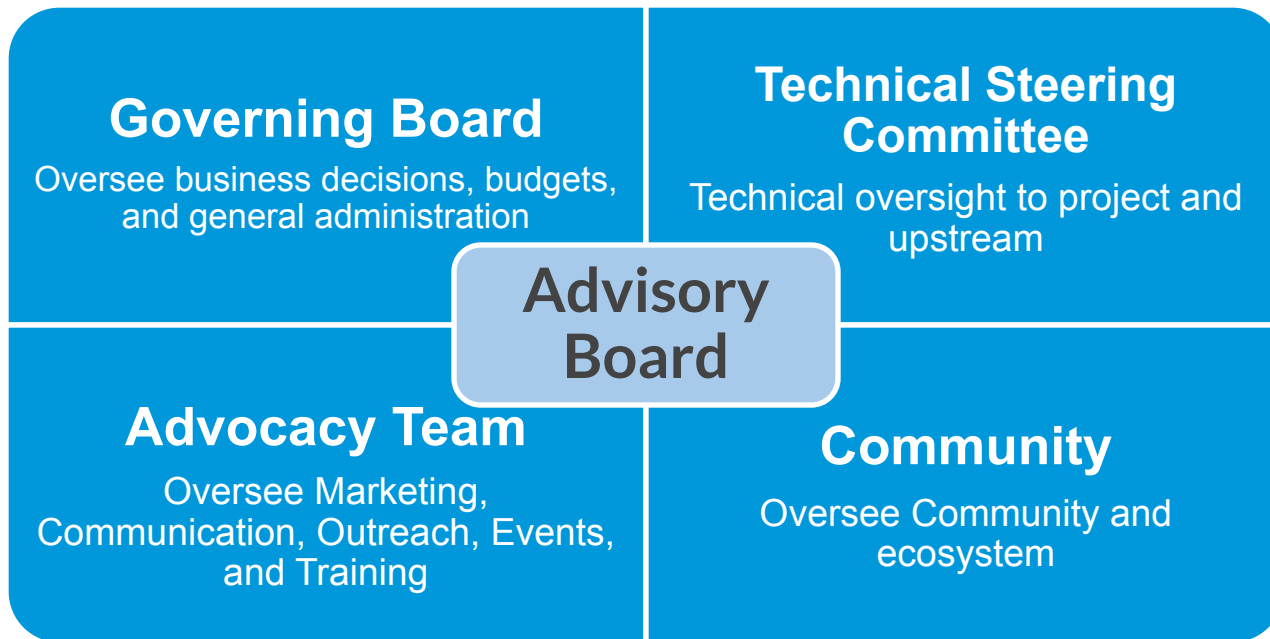
Yocto Project® organisation

- **An open source, collaborative project**
 - Hosted by the Linux Foundation in 2010
 - Project architect is Richard Purdie.
 - Uses OpenEmbedded (started in 2003).
- **Yocto Project Governing Board**
 - Platinum, Gold and Silver member organizations
 - Linux Foundation corporate members
 - Influence the project direction (vote)
 - Contribute financially to its infrastructure and stability.
 - Nominate/vote: Technical Steering Committee (TSC)



<https://www.yoctoproject.org/ecosystem/members/>
<https://www.yoctoproject.org/how-to-join/>

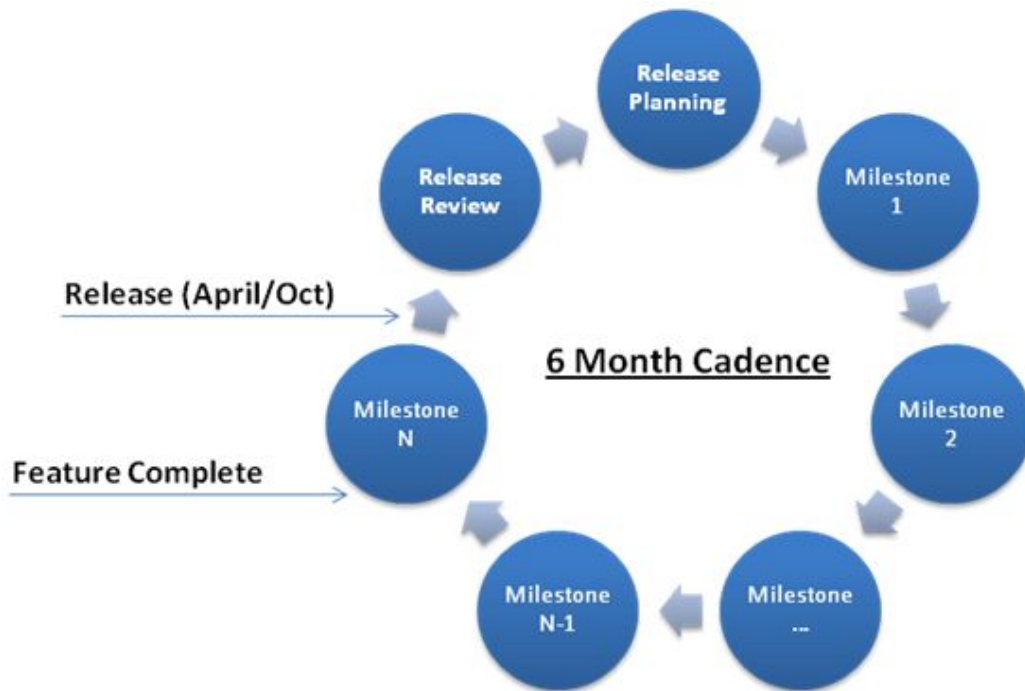
Yocto Project® governance model





Current release process

Predictable release cadence: twice a year since inception



A Yocto Project® typical release content

- **A release is the aggregation of:**
 - OE-core
 - bitake
 - meta-yocto
 - yocto-docs
- **Major component upgrades**
 - Includes ABI/API changes
 - Include major version upgrades
 - New features
 - Using Long Term Support kernels
- **New Yocto Project features**
 - Test infrastructure changes
 - Automation changes
 - Architectures added/removed
- **Bug fixes for issues reported to Yocto Project**
- **Tight integration loop with upstreams**

Yocto Project® Stable release content

Acceptable	Unacceptable
<ul style="list-style-type: none">● Security and CVE fixes● Fixes for bugs● Fixes so codebase works with newly released distros● Bug fix only version upgrades (especially where follows upstream policy)	<ul style="list-style-type: none">● General version upgrades● New Features

- **Strict backport policy (master first)**
- **Same testing as regular releases**

Stable release challenges

- Typically, alongside the latest release the previous two releases are also maintained
 - *Maintenance window is up to one year.*
- Done thanks to developers volunteering community time
- Manual testing overhead relying on Yocto Project[®] members resources.



Automated testing improvements

Yocto Project® automated testing improvements

- **Continuous integration using Yocto Project autobuilder infrastructure**
 - <https://autobuilder.yoctoproject.org/>
 - 25+ builders to validate 12+ numbers of host distros
 - Fairly large project expense in 2019 to modernize builders
- **Major improvements (last two years) to reduce needs for manual testing**
 - ptests on x86 and arm for ~60 pieces of software
 - LTP and LTP posix tests
 - Test reproducibility of our toolchain and minimal images
 - gcc, binutils and glibc testsuites on all arm/mips/powerpc/x86 32/64 bit
 - Over **1.9 million tests in 8 hours**



LTS background and overview

Yocto Project® Long term support background

- Six month release cadence aligns well with pace of open source development
 - However *too frequent* for some use cases and markets
- Many companies using Yocto Project releases end up doing *some* LTS on their own
- Over the years it became a common complain at developers' events and BoF.
 - YP TSC presented to the governing board a request to establish a formal LTS process at ELCE 2019
 - LTS announced in March 2020
 - <https://www.yoctoproject.org/yocto-project-long-term-support-announced/>

Yocto Project® LTS proposal in a nutshell

- **An LTS every two years**
 - Maintained for two years (initial plan)
 - Yocto Project 3.1 is the first LTS
 - Regular stable release maintenance is reduced to seven months
- **Funded by the Yocto Project membership**
 - 20 hours a week of maintainer duties
 - *Steve Sakoman* is the Yocto Project maintainer for v3.1
- **The TSC is responsible for LTS releases, processes and maintainer.**

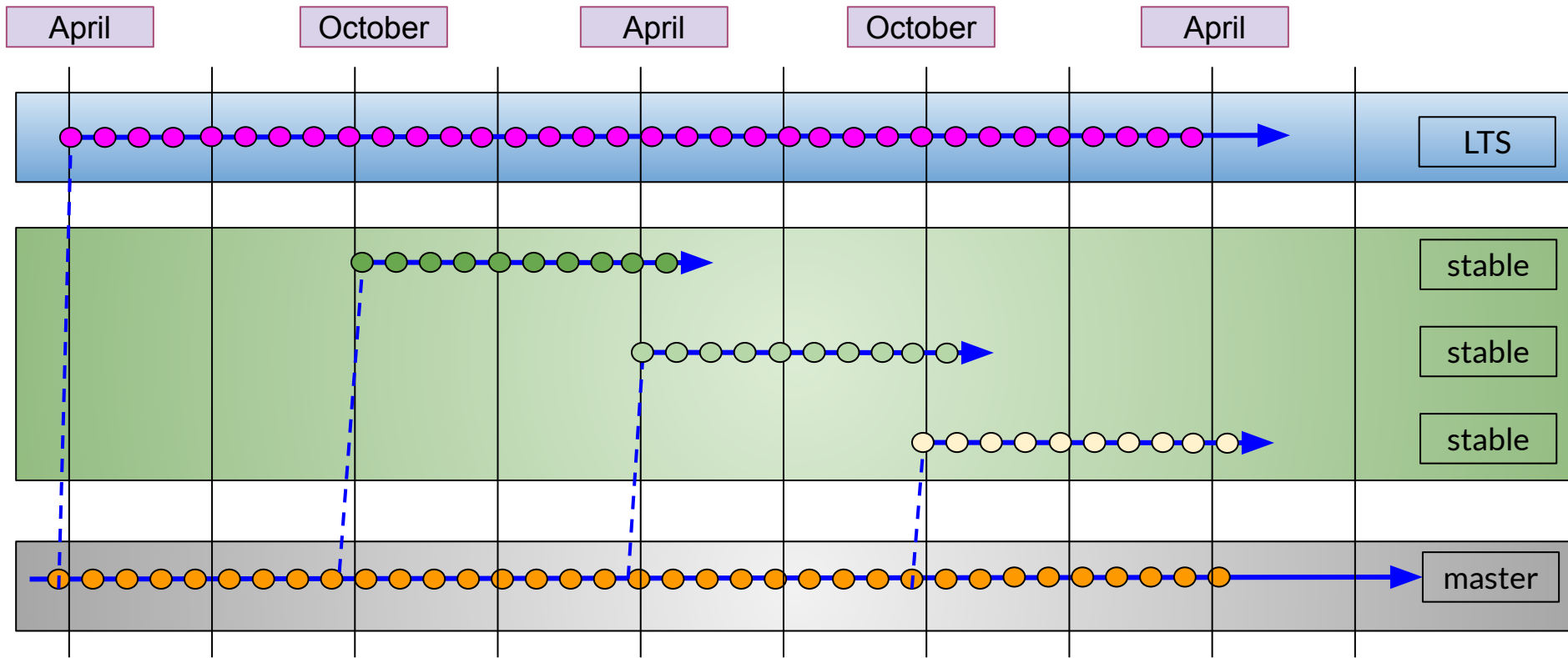
Yocto Project® LTS releases

- **Components to be covered**
 - Bitbake, OpenEmbedded-core
 - meta-yocto-bsp, meta-poky, yocto-docs
- **Not covered**
 - meta-openembedded, vendor layers, ...
- **Only on a subset of supported native build platforms**
- **Rely on Yocto Project AB resources and automated testing**
 - Follow the same testing process as the original release
 - Only run virtualized tests
- **Evaluate use of CVE automated tools (cve-check)**

Yocto Project® LTS : *is / is not*

IS	IS NOT
<ul style="list-style-type: none">● A major change for the Yocto Project, which requires significant resources from the membership● An initiative to create a place for the community to collaborate on LTS● A guarantee that we have resources available to integrate and test changes in a timely manner and to have fast turn around of point releases	<ul style="list-style-type: none">● A replacement for commercial offering from OSVs which offer very long term support (5y, 10y, ...)● A guarantee of "all" CVE fixes, we only agree to integrate what is submitted and passes testing● Is not able to check your own additions and customisations

Release cycle overview



How to contribute to Yocto Project® LTS

- Follows standard Yocto Project / OpenEmbedded contributions guidelines.
 - Submit patches to appropriate mailing list, tagged with [dunfell]
 - Submitted patches should be on `master`, except when incorporating a CVE/bug fix for an old version.
- LTS maintainer
 - assemble and test ‘group of patches’
 - submit working set on the list once a week for review
 - submit pull request to Richard Purdie
- The branch [stable/dunfell-nut](#) always contains the ‘work in progress’ patches.



How can you help?

How can you help?

- **Contribute, share your bug fixes, CVEs and security patches**
- **Test LTS branch with your distro and BSP**
- **Report bugs**
- **Continue to test and develop the main release branch**
- **[Join us and support the Yocto Project](#)**



yocto
PROJECT

THE
LINUX
FOUNDATION