Reference Binary Artifacts Effort

Bruce Ashfield

Overview

History

- OE has a long history with packages / binaries
    - See other presentations for details
- Idea was discussed at ELCe Lyon 2019 (and earlier)
- This specific effort is part of the 5-year planning activities
    - Started in early 2021
        - ~12 observers/members across 10 companies/individuals
        - Draft Goals, phases, requirements
        - Priority and ‘vision’ discussions
        - Roughly bi-monthly meetings
- Effort renewed in April 2022
    - Tangible outputs expected by mid year

Problem statement / solution

- It is proposed to have reference “binaries” available for commonly used components to address ease of use concerns, lower barriers to adoption and test the core infrastructure for binary artifact maintenance
- These would be available, with a defined path into the standard source based "build your own distribution" and other core pillars of the ecosystem.

Terminology

- What do we mean by "binary artifacts" and "ease of use" ?
- Binary artifacts:
  - Outputs from a defined build that can be used / installed on a running target, or to construct a target image. The architecture and optimization are defined by the build parameters, and can impact the level of reusability
- Ease of use:
  - It is obvious / clear how to complete (initial) steps towards a goal
  - Details vary by use case
  - Transitioning between use cases is supported and documented

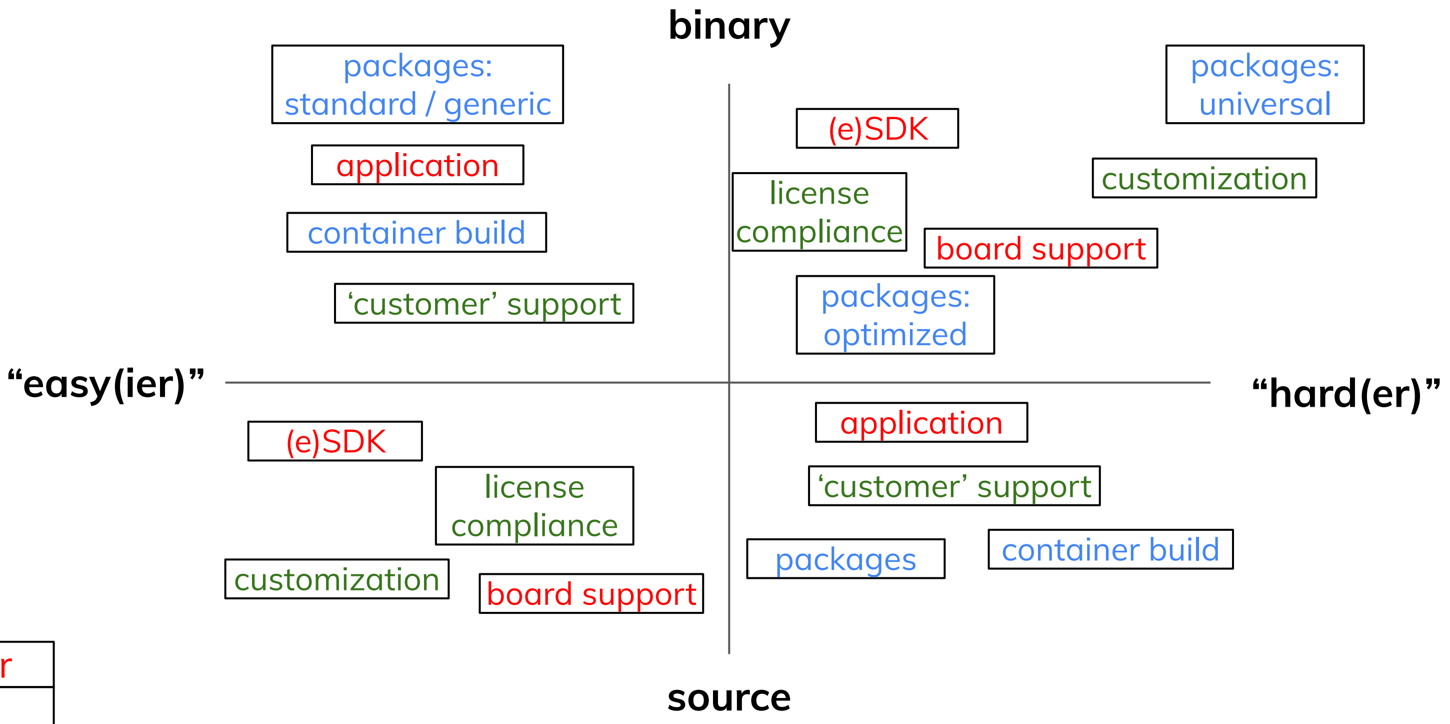
Goals / Requirements

- Don’t want to ‘adopt’ anything existing
  - Equally not not looking to displace existing distros
- OEcore / Yocto Project support for binary artifact maintenance
  - Documentation, core technology, testing
- Reference artifacts available for commonly used components to address ease of use concerns, lower barriers to adoption
  - Defined path into the standard "build your own distribution" and other core pillars of the ecosystem
  - Generic architecture: x86-64, ARM64
- Defined extension to broader ecosystem / vendor artifacts
  - SDK / eSDK
  - Embrace and extend
- Rolling release / no release

Important points

- Focus on the plumbing / infrastructure / best practices
- Reuse, not reinvent
- This is a reference, not a product
- Well defined capabilities and packages, with tangible components
- Not optimized
- Extension is key: with a path to full source build
- Always consistent with the Yocto Project messaging and core competencies
- Not associated with a particular member or existing distro

More than packages (aka let's modernize)



category:

developer
user
production

Beyond packages: Things to consider

- Reproducibility
  - core Yocto Project capability (see reproducible-builds.org)
- Licensing / SBOM
  - core capability
  - multiple ways to consume it and accompany binary deliveries
- Customization
- Support from the ecosystem (if modified/extended, or not)
- Platform Extension
- Application AND system developers
- Support, maintenance, and updates

Status

- Phase0
  - Preparation, planning, and prioritization
- Phase1
  - Definition and documentation
    - Images, tuning, architectures, target boards (qemu*), quickstart guides, etc
- Phase2
  - develop, test and deploy
  - CI/CD, nightly/weekly testing, image deployment, demos (boot, extend, etc)
- Phase3
  - Extend and maintain
  - Containers (dockerhub, etc), ecosystem expansion, hardware reference(s) …

Currently in phase 1.5

Ecosystem integration

- Once stable, expand outside of OEcore
- Container frameworks, IoT, etc
- Updaters (OTA or otherwise)
- Complex image formats
- Installers
- …

Call to Action

- Join at any time: we need development resources as well as input
  - Tools
  - Documentation
  - Compute resources
  - Test cycles
  - ….