



e2factory – Build Automation

In professional embedded software projects - especially in an industrial setting - we assume product life cycles of several years. Device families can often „live“ for decades. Build and software management that is accurate over this period of time for board support packages is essential in order to enable economical further development over the long term.

At the same time, it is the desired transparency of open source software and the possibility to create solutions using smaller components, as well as the potential to take part in innovations and the continual availability of security updates from the community that make things manageable.

Flexible Configuration and Variant Management for Embedded Linux

At the latest when embedded Linux operating system software is subject to certification it becomes essential to be able to demonstrate an accurate and reproducible build process with reliable version management.

Our software management and build system e2factory, which is optimized for industrial requirements, supports the entire product life cycle management of the embedded software components contained in our customers' products, especially, but not only, at board support packages level.

e2factory has been continuously maintained and further developed since 2003 and has been used in several hundred development projects as well as for maintenance and updating. e2factory is open source software and is available under the GPLv3.

Benefits

The decisive characteristics and functions for industrial use are primarily the following:

- e2factory is easy to use: low complexity and focused functionality
- e2factory makes reliable build automation management and auditable software change management possible
- Reproducibility of all appropriately created software versions through checksum controls of all the initial parameters of every build process (sources, build scripts, configuration, build environment)
- Multi-user capability through client/server architecture
- Transparent compilation board support packages with low complexity
- Process security with independence from particular build computers and individuals
- Software management on the target and cross-compilation
- Supports community-near work (mainline compliance)
- In the context of projects the sources are obtained directly upstream (no distribution log-in)

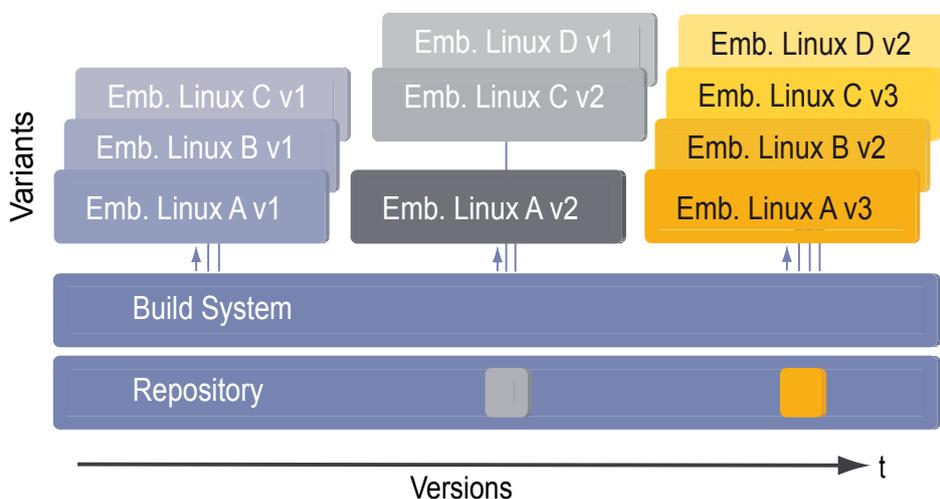


Fig 1: e2factory makes reliable version and variant management possible. Even years later, the desired releases can be accurately reconstructed and modified independently of the build computer. The process behind this fulfils diverse certification requirements.

- Packages, drivers, libraries, patches etc. from other sources (like yocto) can be integrated
- Integrated version management; unlimited versions can be managed in a project, traceability of changes
- e2factory allows secure, distributed work across different locations (e2factory workbench)
- Efficient and reliable life cycle management throughout the product life cycle and diverse software versions as well as different product variants if necessary
- Targeted quality-ensured compilation of BSPs without unwanted patches, version conflicts etc.; no distribution lock-in

e2factory is an emlix brand and is continually maintained and further developed under emlix's responsibility. Here, there are clear paradigms in the areas of reliability, backwards compatibility and the ability to validate with central reviewing.

e2factory core

e2factory is freely available as a tool under the GPLv3 (open source licence).

This freely available e2factory core version (www.e2factory.org) includes the entire build environment and provides the user with the technical possibility to build embedded Linux board support packages reproducibly. e2factory core is documented in detail in man pages.

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e2factory professional

For professional use in companies emlix offers a professional open source approach with comprehensive service and support in the course of development projects as well as throughout the entire product life cycles of customer products. e2factory professional includes:

- The e2factory core version
- Project set-up including project-specific toolchain and changeroot
- Project-specific configuration of e2factory
- e2factory workshop and support contingent
- Signature of host and target packages (optional)
- Host and target package management
- Comprehensive documentation (user's manual)
- Hosting of the development infrastructure (at least during the development time): server infrastructure in certified computing centres; backup and recovery
- If necessary, porting to the customer's server

After the project is completed, if desired, emlix offers service and support throughout the entire product life cycle, support with setting up further projects, e2factory updates and hosting of the customer project.

e2factory workbench

For the support of seamless cooperation between developer groups emlix offers the e2factory workbench. It supports the development of board support packages and applications distributed across locations and companies, and offers the necessary processes for long-term product maintenance.

Using e2factory workbench emlix hosts the projects of its customers within the emlix infrastructure (certified computing centres, backup and recovery). Defined users can access the workbench via encrypted connections and work together within a development cooperation worldwide, independent of their location.