Embedded Linux System Development

As providers of solutions across a wide range of industries, we have many years of experience in the development of embedded Linux platforms optimized for industrial products in the area of consumer and investment goods.

The specialist competence of our staff encompasses the necessary technical know-how for system planning, development and quality assurance, and also a wide-reaching understanding of the requirements placed on products by the market. With our project management skills and our standardized development processes, we contribute to ensuring the success and economic viability of software projects through active planning, control and testing.

Intelligent System Solutions from Design to End of Life

Boot loader, kernel and driver development, integration of low-level tools and libraries as well as the board bring-up, boot-time reduction, the optimization of system performance and power consumption as well as the development of a function-optimized root file system are core competences of our company.

For applications in the area of control regulation, we analyse the time response and put various real-time extensions

Test Automation

Embedded Linux platforms put together by emlix (board support packages) are carefully tested. Our Test Application Framework (TAF) enables reproducible and automated Linux system tests, and can be extended by product-specific tests.
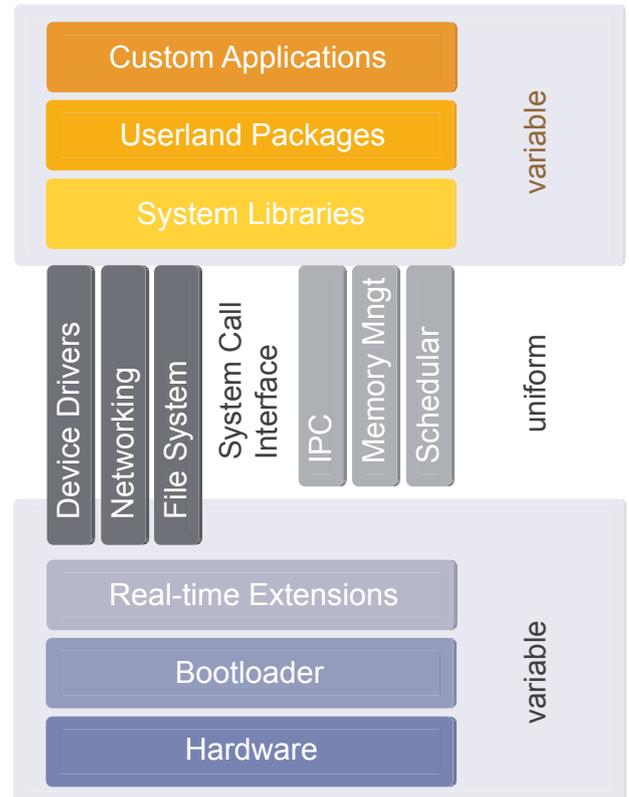
Linux layer model for a product platform: The system is developed according to the specific requirements of a product or a product family. In contrast to standard distributions controlled and selective updates of an embedded Linux system platform can be performed.

into operation. Fieldbus, radio, audio, video and power-fail-safety requirements are supported through the integration and adaptation of appropriate drivers, subsystems and functions. When putting the board into operation our well-founded knowledge of hardware is of considerable use.

The interfaces and technologies for which we develop include:

- Audio, video
- I2C, SPI, I2S
- Ethernet, TCP/IP, USB, RS, CAN
- WLAN / WiFi, Bluetooth, ZigBee
- GSM, GPRS, UMTS
- Xenomai, Preempt RT

In addition to the provision of maintainable operating system platforms for devices, machines and plant, our know-how portfolio includes wide-ranging experience in the development of product-specific, functional characteristics:

- Development of system architectures
- Technology and package selection
- Hardening of systems
- Boot-time optimization
- Security and update concepts
- Power-management adaptations
- Integration of video and sound
- Real-time and hypervisor solutions
- Container-based virtualization
- OPC UA and MQTT solutions
- Asymmetric multiprocessing (AMP)
- Adaptation of libraries and tools
- Build and software management
- Automated system tests and test reports
- Documentation and certifiability   Dokumentstation

We thereby put together embedded Linux platforms specifically for the products/product families of our customers and, in consultation with them, we take great care to perform developments in a mainline-compliant manner as far as possible. Our Linux systems are reduced to the components and packages that are really necessary for the desired functionality. Components such as hardware drivers are nevertheless taken over in a targeted manner from manufacturer BSPs in order to avoid generating unnecessary work and costs.

Android –
Used Industrially

For certain applications, Android has become firmly established, also in an embedded environment. We are always pleased to advise and support our customers on its use in an industrial context.

The FAG Smartcheck detects deviations in the vibration pattern of industrial bearings very precisely to enable early intervention. The Linux system put together and maintained by emlix is strictly mainline-based and can therefore be maintained highly efficiently and equipped with (security) patches.

Our software management and build system e2factory reliably and reproducibly supports the subsequent variant management - the maintenance over the life cycle. In comparison with manufacturer distributions, e2factory-based systems are characterized by high transparency, mainline-near development and certification-friendly comprehensibility of changes as well as flexible extendability.

On the basis of BitBake Poky-Tiny Yocto we offer a procedure for less-strict development processes that is at least largely mainline-near.

Systems developed by emlix have been successfully certified by the FDA and the PTB. We also support validatable development according to IEC 62304 for medical products and offer the required maintenance concepts.

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