

If You Think that Portable Design is Important ...

Time is a critical resource in embedded systems development.

Why wasting it while designing your application or porting it to a new hardware platform and operating system?

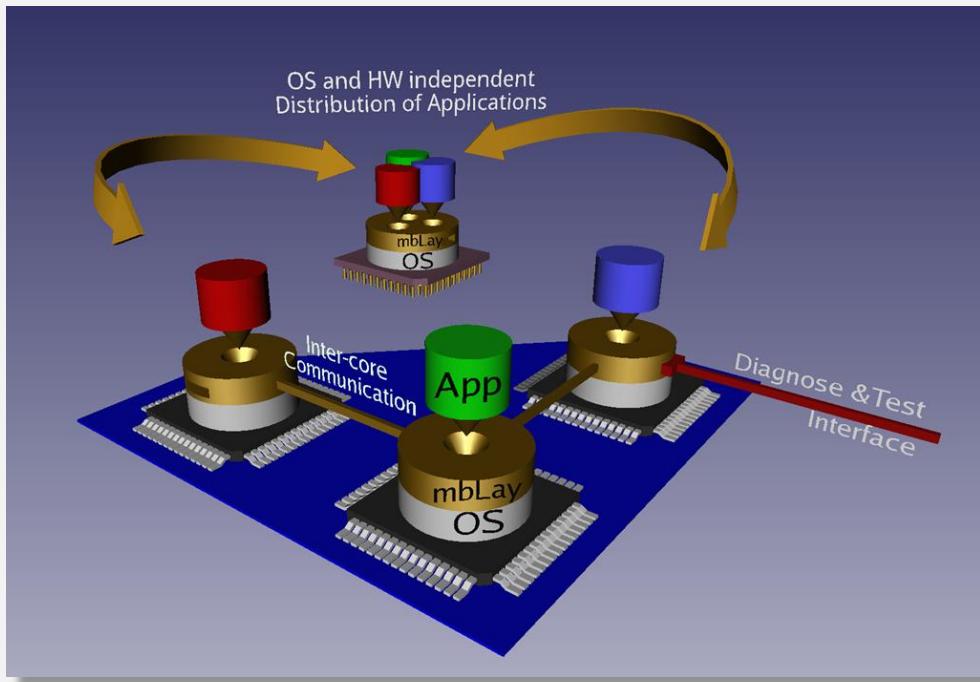
Changing system configurations and interfaces could be a nightmare in distributed systems.

Do you have a centralized approach to handle that?

Multi-Core systems are increasingly applied in the embedded world.

Did you lay the foundation for your application to be distributed on a Multi-Core platform?

embenatics has put these challenges in the focus of the design and development of their products. We offer a software foundation layer and a tool suite that supports your development team in designing your software in an efficient, portable and maintainable way. We know that future product requirements are hard to predict, therefore we provide you with our technology to design your products as flexible as possible. Our approach allows your company to concentrate on the core competencies that differentiate your valuable product from competitors.



embenatics offers a software foundation layer which is easily added on top of your preferred operating system. It provides solutions for most common requirements that exist in your application development cycle. These are operating system independency, diagnostic capability, testability and the distribution of interacting software components in homogeneous and heterogeneous systems, especially in multi-core environments. The foundation layer is adaptable to several real-time operating systems designed for embedded systems, as well as to high level operating systems like Windows™ or Linux™.

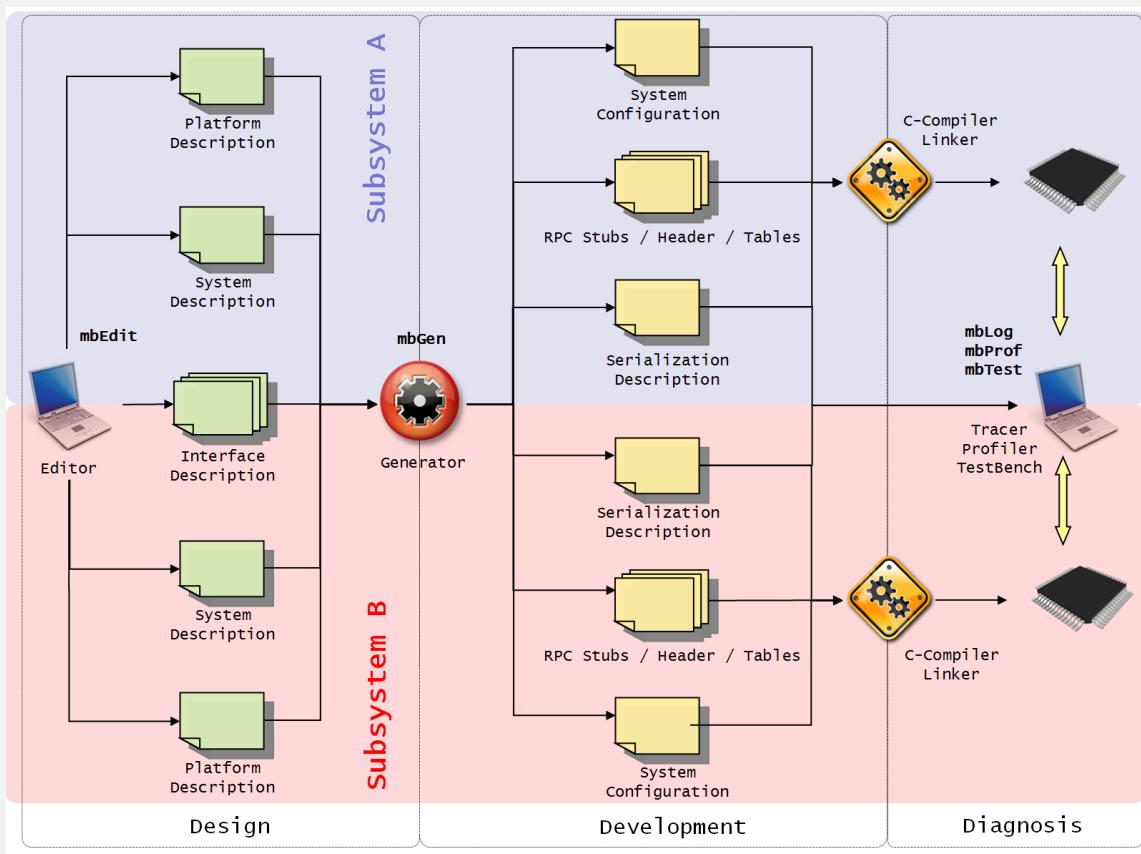
The **embenatics** transport model allows the communication between software components regardless of their location. The communicating peers interact in a transparent way. Therefore they do not need to know if they are located on the same core, on different cores of the same SoC, or on cores of different systems, that are connected by any kind of wide area network.

The **embenatics** design methodology is based on a centralized definition of system immanent properties like communication interfaces, system resources and software component distribution. Following this approach the **embenatics** foundation layer is accompanied by a development tool suite that supports a convenient and unified interface and system definition process. The output of the design phase is used by the workflow as single source input to automatically generate source code templates, C-headers and configuration files. These are reused during the implementation process, as well as for system test and diagnosis purposes.

The **embenatics** product portfolio is rounded up by a diagnosis tool for target data logging and visualization to analyze the runtime behavior of the system and your application. So your development is well prepared to be ported to different platforms, different environments and different operating systems that are already available or will be in the near future.

The following picture shows an overview of the **embenatics** typical workflow.

Artifacts created in the system design phase are the key input during development, diagnosis and testing.

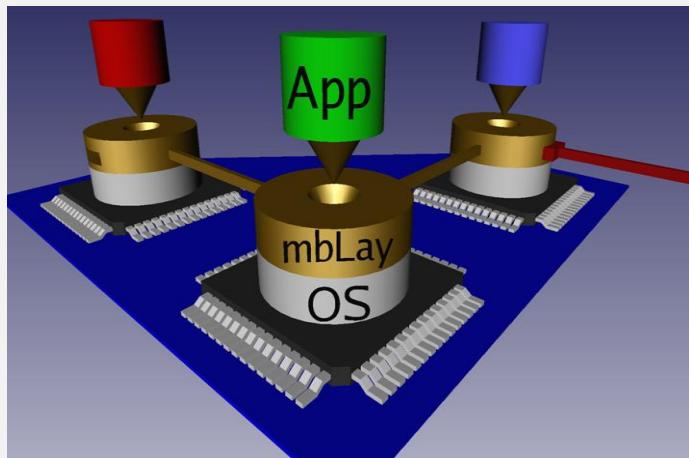


Software interfaces of the main components are described by **embenatics** interface description language (IDL). Interaction between components and their distribution within subsystems are defined by using our system description approach. A generator tool will convert all description documents into source code templates, C-header and configuration files. They are used during the development phase as API prototypes and data type definitions for remote service based communication (RPC).

The same description documents are used during the diagnosis and test phase to visualize system communication and data structures, as well as to define test vectors and patterns. Profiling information, which is provided by the foundation layer, is available in order to support optimization work with respect to memory or CPU load.

mbLay

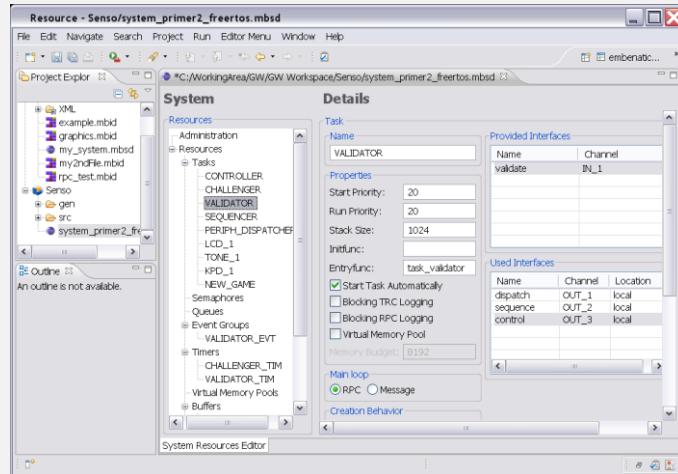
Is the **Foundation Layer** for your embedded system design. Though it can be used stand-alone in your existing development workflow, in combination with the **embenatics** tool suite it unleashes a lot more features than a regular abstraction layer will provide.



- Easy-to-use API to access OS resources (threads, memory, timer, synchronization, interrupts)
- Automated creation of resources and start-up phase based on system description
- Infrastructure for inter-thread and inter-processor communication
- Diagnose interface for visualization of dynamic run-time behaviour
- Test interface to stimulate services from external test tools
- Tracking of system resource usage in order to detect memory leaks, stack overflows and to optimize the system behaviour with respect to memory- and CPU load

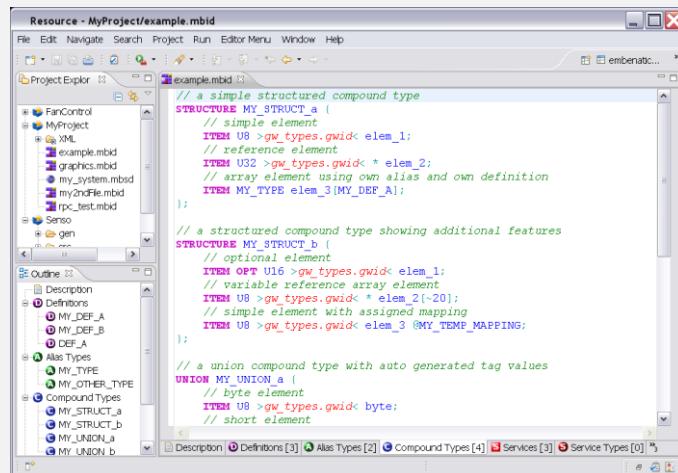
System Description Editor

Describe the system resource configuration in a high-level way. This approach hides most of the OS and hardware dependencies. It also provides a clear and convenient way to create and maintain the OS resources used by the customer application running in **embenatics** mbLay environment.



Interface Description Editor

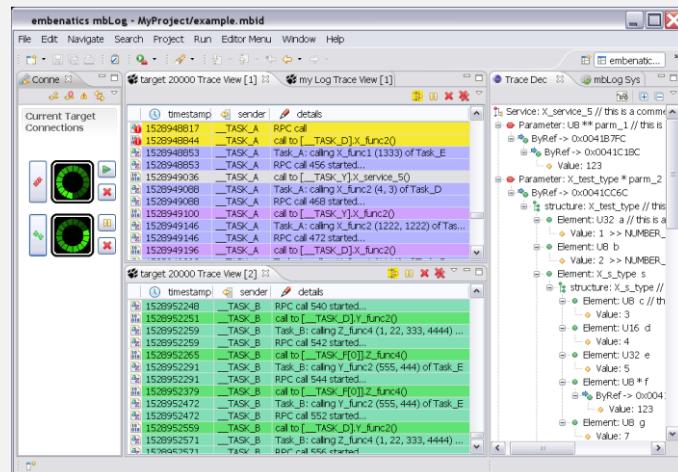
Describe all communication interfaces and data structures of the system using this specialized editor. The editor guides the user through the definition of service APIs and supports them in re-using data structures, types and constants throughout the project.



mbLog

Target Data Logging and Visualization

Get in contact with the running target and follow the traces of the embedded system. The mbLog tool captures all information sent by the target via the diagnose interface and stores it for on- and offline analysis. It is also possible to send requests and interrogations to the target in order to stimulate services via RPC and verify data structures and memory segments.



- Clearly arranged system configuration overview
- Description of OS resources and their properties
- Configuration of dynamic system memory
- Setting of communication links between threads
- Drag and drop of resources within multi-core systems
- Configuration of drivers for diagnose interface and inter-processor communication
- Project oriented resource organization

- Easy to learn C-like Interface Description Language (IDL)
- Supports declaration of optional elements, variable arrays and tagged unions
- Syntax highlighting and coloring
- Context sensitive code completion
- Multi-tabbed editing for a better overview
- Project oriented resource organization
- Comfortable reuse of data types and services across documents

- Supports multiple connections to different target systems
- Supports multiple trace views for the same connection
- Easy adjustments of trace filters
- Individual trace color mappings
- Displays timestamp, sender and receiver information
- Decoding of binary data traces into a clearly readable format
- Archive data logs in combination with session settings
- Stimulate target services via remote procedure calls

Services

In addition to our software products we offer the following services:

- ✓ Support of customers during deployment of **embenatics** products
- ✓ Implementation of prototypes utilizing **embenatics** products
- ✓ Assistance during the design of new software based on **embenatics** products
- ✓ Development and adaptation of customer specific software
- ✓ Embedded software optimization consultation
- ✓ Onsite **embenatics'** products training

Profile

embenatics is a new company for embedded software development that entered the market in 2010. The company is based on more than twenty years of experience in embedded software, collected in several well-known international companies. During this time we created high quality software with special focus on testability, portability and compatibility with third party components. The foundation layer software products offered by **embenatics** are based on this experience.

Our business philosophy is to establish a close and trustful relationship to our customers in order to successfully promote projects over a long period.

If you are interested in our products and services please don't hesitate to contact:



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