

Application Development

When developing control, operation and networking applications, we utilize C, Qt and Java, industrially tested libraries and frameworks for HTML5. In the planning and implementation process we work closely with our customer's product managers and developers.

Our core competence lies in the development of software for devices, machines and systems. In addition to the conception and development of functions at the device and process control level, we also offer server-side integration into cloud or ERP systems.

Agile application development for innovative solutions

Agile, innovative development, complexity and tight deadlines mean that our clients' development projects cannot have definitive up-front specifications. The solution frequently lies in a collaborative development process with an agile approach and close, regular coordination with our customers. The exact specification of the individual steps thus happens over the course of the project.

The quality assurance of our application development mostly takes place in the form of unit tests. The goal is to identify errors in complex applications already during the programming stage. In addition, the test coverage is measured. We also conduct procedures such as code walk-throughs. Dynamic analysis tools are used to help analyse and evaluate the runtime behaviour.

We offer long-term maintenance contracts for our solutions, thus taking responsibility for our customers' product life cycles and investments.

Technology & Frameworks

The context in which the application is to be used is decisive for the selection of a programming language and further tooling. Here, the technical requirements and the architectures of networked devices are important factors. The programming languages, frameworks and technologies emlix uses to develop applications include the following:

- C/C++, Qt, Java, LUA, Python
- JSON, XML
- jsonRPC, D-Bus
- HTML5, JavaScript, REST
- HTTP, FTP, SMTP, TCP/IP, UDP
- OPC UA, MQTT
- Authentication, encryption
- Certificates, signatures
- SSL, TLS



Fig. 1 The control and operation unit for liquid-transporting tanker trucks must be easy to use and must also be able to cope with rough conditions.

RESTful web services

For the development of IoT systems, RESTful web services provide an established architectural basis for the realization of distributed information systems. Typical scenarios are, for example, the use of an industrial HMI application on both mobile devices and panel PCs, or using such an application in addition to the existing software infrastructure.

emlix realizes HMIs with HTML5 technology, Qt or Java Swing/FX on the basis of RESTful Web services. Our solution portfolio also includes developing middleware architectures for process control, connecting components through RESTful web services and integrating them into industrial cloud services.

HTML5-based applications

HTML5 apps enable elegant and intuitive operation of complex industrial systems. With the aid of a responsive design approach, HTML5 apps can integrate the operation concepts of a variety of HMIs, such as tablets, smartphones and panel PCs. The application dynamically adapts to the respective screen. Communication between the plant or system and the HMI usually takes place wirelessly via WLAN.

Industrial apps for Web-based system operation in Industry 4.0

An HTML5 application is always just a component within a larger system consisting of hardware, operating system and application software. emlix solutions bring together our specialist knowledge of the embedded Linux systems used for control purposes and our many years of experience in architecture and technology selection for industrial apps.

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