We discuss the architecture and software engineering principles of the Robotics Library (RL). Driven by requirements of robot systems, research projects, industrial applications, and education, we identify relevant design requirements and present an approach to manage hardware and real-time, provide a user-friendly, object-oriented interface to powerful kinematics and dynamics calculations, and support various platforms. After over ten years of development that started in 2004 and evaluating many variants of the architecture, we discuss the design choices for the components of the library in its current version.