Embedded systems are ubiquitous in our society, they control vehicles, aircrafts and medical instruments. Some of these systems are distributed, which means they are part of a network and their operation is coordinated. Software development for such systems can be a difficult problem.

In this thesis we propose SOFA 2 component system to simplify the software development for distributed embedded systems where the distribution of components is handled entirely by the component system. Lego Mindstorms is proposed as the model of a distributed embedded system. A runtime environment for SOFA 2 and a demo application were developed to evaluate the approach.

The proposed approach delivers seamless component distribution. Nevertheless, non-functional requirements such as memory, program size or disk space must be included in the implementation to fully benefit from a component system.