The document introduces the control part of a system model targeted at UML 2.0. This control model is the second of a series of results of a project on the formal foundation of UML, carried out by the Queen's University (Kingston, Canada), the Technische Universität München (Munich, Germany) and the Technische Universität Carolo-Wilhelmina zu Braunschweig (Braunschweig, Germany). The long term goal is the definition of a formal semantics for structure, behaviour and interaction of object-oriented, possibly distributed systems, which is abstract enough to be of general value and detailed enough to constitute a semantic fundament for the UML.