

===== THE ABSTRACT =====

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Title = Object oriented algebraic specifications and the specification of systems

Abstract = We present a new formal approach for the specification of systems which allows to write terse and legible specifications, within an "object oriented" style, and without loosing the advantages of the algebraic functional approaches. According to this new formal approach, we show that a lot of system properties cannot be easily deduced from the object properties: the actual "topology" of the objects within the system (the number of objects, their interconnections, etc.) are also important informations that must often be used in order to establish those properties.

To add an object into a system can entirely modify the behaviour of the other objects. Consequently, a complex system composed of objects cannot be incrementally defined via a method that adds objects (or object types) one by one. Consequently, with respect to the so-called "stepwise development of formal specifications", and in spite of very common ideas, an object is NOT a "super module". Object orientation and modularity could be, after all, almost independent issues.

We show that a better method is to start from a very abstract specification of the system, containing very few high level object types and to perform several abstract implementations steps on each object type. Successive abstract implementations can be used to retrieve a stepwise development of a system specification (from a small system with very few high level object to a big system containing many simpler object types).