ON THE DESIGN AND IMPLEMENTATION OF DISTRIBUTED SYSTEMS USING LOTOS*

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Abstract

LOTOS (*L*anguage *o*f *T*emporal *O*rdering *S*pecification) is an internationally standardardized formal description technique (ISO 8807) for the specification of open distributed systems. It is a high-level specification technique that has been designed on the basis of powerful concepts from *process algebra* and *abstract data type techniques*. In our presentation we will discuss not only the potential of LOTOS as a powerful specification technique, for which it has received wide recognition, but we will devote special attention to the more recent developments to achieve LOTOS-based design and implementation methods that are supported by integrated tool environments. In particular, we will discuss the influence of the LOTOS syntax and semantics on the specification, verification, transformation, and testing of designs, and on the functionalities and structures of supporting tool environments. We will illustrate this with examples of LOTOS-based *specification styles*, *correctness preserving transformations*, and *test generation* and *selection* methods. Most of the reported work has been carried out as part of the European research project ESPRIT/LOTOSPHERE, which has just recently been concluded. Finally, we will indicate some of the LOTOS based developments that will take place in the near future.

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