Chapter 1

Design of Language Elements for Dynamic Distributed Computation of Clean Expressions on Clusters

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Abstract: Our aim is to express computations in the form of distributed process-networks, to develop and test parallel functional applications on PC clusters with Clean components using a middleware for the distributed communication and synchronization.

The core version of the D-Clean and the D-Box languages supporting the distributed computation of the Clean client programs were presented earlier. In this paper extensions to these languages are added in order to support dynamic behaviour, which is highly needed in order to make possible to write recursive and also embedded expressions.

The paper aims to define the requirements of such a distributed programming environment which supports dynamic loading and starting of functional components and to present API functions for the communication between the components.

Keywords: D.1 Programming Techniques: D.1.1 Applicative (Functional) Programming, D.1.3 Concurrent Programming.

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Key Words and Phrases: distributed functional programming, coordination language, Clean, functional skeleton, dataflow.

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