DELIS
Dynamically Evolving, Large-scale Information Systems

Integrated Project
Member of the FET Proactive Initiative Complex Systems

Deliverable D6.2.3

Prototypical implementation of top-down overlay network
Start date of the project: January 2004
Duration: 48 months
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Due date of deliverable: December 2006
Actual submission date: December 2006
Dissemination level: PU – public
Work Package 6.2: Self-organizing Semantic Overlay Networks
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1 The 3nuts Peer-to-Peer Network

3nuts is a peer-to-peer network combining the benefits of reliable random graphs and semantic search trees. The goal of 3nuts is to overcome the restricted query languages induced by the use of distributed hash tables. In most of the currently used peer-to-peer networks these distributed hash tables do not support the efficient exploration of the semantic neighborhood of a data entry. In 3nuts, semantic relationships of data are preserved, because peers are assigned to the data and not vice versa.

3nuts will allow nontrivial lookups, like prefix search for example. All network operations in 3nuts are local and distributed, i.e. simple handshake operations maintain the network structure. Besides this, 3nuts provides fair load balancing, fast data access and guaranteed robustness, proved by rigorous analysis.

A first prototype of 3nuts is available at:

http://3nuts.upb.de