Overview
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2011/07/16 00:46
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Overview of TuCSoN

The TuCSoN model

TuCSoN (Tuple Centres Spread over the Network) is a model for the coordination of distributed processes, as well as autonomous, intelligent & mobile agents.

The TuCSoN coordination abstraction

TuCSoN exploits a notion of local interaction space, called tuple centre, used for process & agent communication and coordination. A tuple centre is a tuple space enhanced with the notion of behaviour specification. Like a tuple space, a tuple centre is a coordination medium that

- enables agent & process communication through the exchange of tuples, which are knowledge chunks structured as lists of (possibly heterogeneous) information items
- supports generative communication — where the life of a message is independent of the life of the sender who generated it — as a form of communication promoting uncoupling
- promotes knowledge-based coordination, for its basic synchronisation primitives work based on information availability in the tuple space/centre
- exploits associative access to the information expressed by communication tuples, promoting coordination based on information content of tuples
- makes it possible for coordination to deal with partial / incomplete knowledge, since associative access is based on a matching mechanism allowing partial / incomplete specification of tuples as tuple templates

Unlike a tuple space, a tuple centre

- has a behaviour that is not fixed once and for all by the coordination model, but
- can be programmed so as to embody application-specific coordination laws

As a result, several issues critical to distributed and complex applications, such as heterogeneity of components, openness of systems, unpredictability of autonomous agents and of the environment can be charged upon TuCSoN tuple centres. In particular, social coordination issues can be charged upon the (programmable) coordination media, thus making possible for agents to focus on individual coordination issues.

The TuCSoN coordination languages

Warning: Work in progress

The TuCSoN distributed topology

Warning: Work in progress

The TuCSoN coordination language provides agents with a twofold perception of the TuCSoN interaction space, as either as a global space made up of uniquely denoted coordination media, or a collection of local spaces associated to Internet nodes. This suits both roles of Internet agents, that is, as either network-aware entities or (network-unaware) local agents.

The TuCSoN coordination infrastructure

Warning: Work in progress

The TuCSoN model is implemented via a Java-based coordination infrastructure, which is available as an Open Source project through SourceForge under the LGPL license.

TuCSoN Contacts
Warning: Work in progress

- Andrea Omicini

**TuCSoN URLs**

- [http://tucson.apice.unibo.it](http://tucson.apice.unibo.it)
- [http://sf.net/projects/tucson](http://sf.net/projects/tucson)
- [http://tucson.sf.net](http://tucson.sf.net)