An increasing complexity of intelligent manufacturing systems as well as the overall demands on flexible and fault-tolerant control of production processes stimulates development of two pillar, emerging technologies that will soon make an important breakthrough in the field of intelligent manufacturing and control. These two paradigms are the event-driven control strategy, typical for holonic systems, and the distributed information processing resulting in the multi-agent systems.

The research communities working in both fields approach the problem of intelligent manufacturing from different viewpoints and nearly independently. They use their specific terminology and techniques. The holonic system (HS) community is rooted in the concept of holons as presented by Koestler and is strongly driven by the requirements of industrial control. The community is well organised around the international HMS (Holonic Manufacturing Systems) consortium.

On the other hand, comparatively much larger and more diverse community of researchers working in the multi-agent system (MAS) area, is influenced by the ideas of highly distributed computing in computer networks as well as by the ideas of distributed artificial intelligence. As the community is much more heterogeneous, there are different organisational frameworks where the researchers are grouped. The European MAS researchers are organised in the AgentLink consortium worldwide in IFMAS (International Foundation for MAS), Agent Society and FIPA (Foundation for Intelligent Physical Agents) with an emphasis on industrial standards. The unifying principles of the multi-agent paradigm have been clearly specified only recently.

Both the paradigms share some ideas and they differ in the other issues.

Both the research communities do respect the same, very fundamental principles of holons’ and agents’ activities such as their autonomy, cooperativeness and openness. The architectures of either holons or agents are multi-layered, with more standardized architecture of head/kernel in the case of holons or body/wrappers as in agents. Both approaches explore this some kind of blackboards or brokers. There are similar trends in standardization quite evident (IEC 1499 standard in the case of HS, FIPA standard in the area of MAS).

On the other hand the approaches differ in the following:

**Motivation:** The HS research is motivated by flexible manufacturing problems. On the opposite side, the MAS research is motivated by implementation of distributed computational systems and decentralised decision making.

**Subject of research:** The HS researchers are preferably oriented toward the low-level end of the manufacturing process, low-level communication and behavioural standards, integration, etc. Unlike HS people, MAS researchers aim at implementing social behaviour of intelligent entities, cooperation and coordination strategies, intelligent brokerage, learning from own experience, teamwork and coalition formation etc. From a very simple viewpoint, we can see the HS research stream providing platforms/frameworks for implementation of knowledge-driven higher level coordination and communication strategies based on the MAS research results.

**Holarchy:** The holarchy principle that allows creating a holon as an integrated set of more lower level holons is used in HS. This is not considered in the MAS field where autonomy and functional differences of individual agents are rather preferred. However, agents very often group themselves into hierarchically organised teams.

**Human interface:** Each holon is usually equipped with a human interface. Human interfaces in MAS are very often implemented as separate agents providing services to the community as a whole.

These differences are quite evident and distinguishable. In the other aspects we hope to find rather good analogies than differences. These issues should be thoroughly discussed. For example, is the problem of the cooperation domains (HS) similar to that of coalition formation (MAS)? Is the splitting of the holon into the head and kernel analogous to the agent’s body and wrapper paradigm? To what extent is the notion of holarchy analytical to grouping agents into hierarchical teams?

The research in both fields inevitably converges. It is time to systematically bridge the gap, reuse similarities and capitalise on differences. HOLOMAS’00 workshop is a modest contribution into organising wider discussion forum for researchers, academics and industrial decision makers from the fields of holonic and multi-agent systems. We expect, these and many other related issues to be openly discussed during this event.