

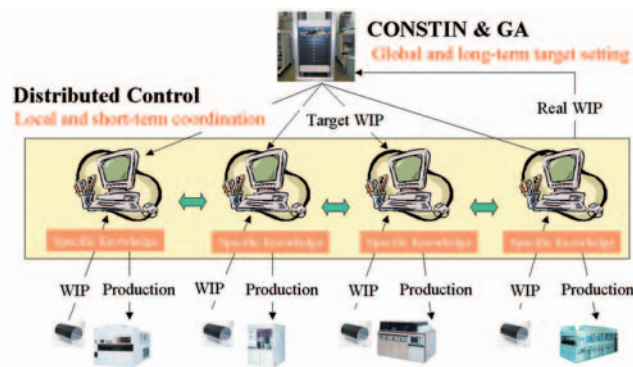
Inventory Reduction Through Accelerated Optimization in Semiconductor Fabrication Process

It has been pointed out that the semiconductor industry of Japan is lagging behind the new industrial countries in respect to the production efficiency, as the multi-product, varying volume production system based on the cutting-edge processes advances.

A highly efficient production control method is developed to keep stabilized production despite production variability caused by accidental failures, while reducing the inventory volume of half-finished semiconductor line products, through the optimization technology based on ultra-fast simulation

and the distributed production control scheme.

The study will contribute to improving the performance and expanding the market share of the Japanese semiconductor industry, which has been seriously challenged with respect to the production cost in the international competitive market.



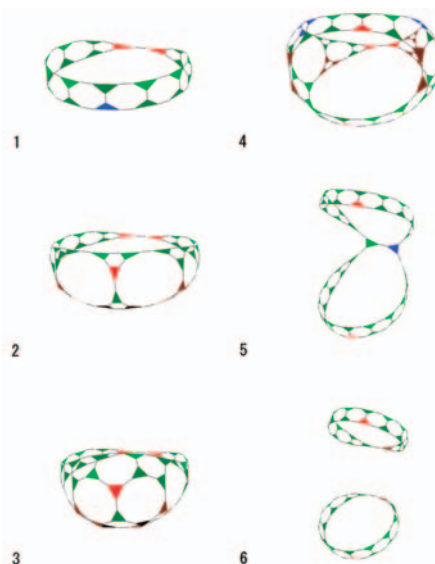
Hierarchical distributed production control system

Kazuo MIYASHITA

Intelligent Systems Institute
e-mail:
k.miyashita@aist.go.jp
AIST Today Vol. 4, No.2
(2004) 13

Development of a Graph Automata Model for Self-Replicating Processes

A variety of models of self-replicating processes have been proposed within the framework of two-dimensional cellular automata. They are heavily dependent on or limited by the peculiar properties of the lattice spaces. We introduced a new framework called graph automata to obtain a natural description of complicated spatio-temporal developmental processes such as self-replication. As an illustrative example, a self-replication of Turing machine is shown in a simple and straightforward formulation. Graph automata provide a new tool to approach important scientific problems such as evolution of morphology, and also to give the basis of self-replicating and self-repairing artifacts.



Self-replicating process of a Turing machine

Kohji TOMITA

Intelligent Systems Institute
e-mail:
k.tomita@aist.go.jp
AIST Today Vol. 4, No.3
(2004) 14