

Preface

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Editor

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This Q4'98 issue of the Intel Technology Journal (ITJ) describes Intel's manufacturing processes and strategies. Semiconductor manufacturing is characterized by very complex process flows made up of many process steps, all built to very close tolerances. Furthermore, there are complex interactions in these process flows. The papers in this issue describe how Intel develops components technology and manufacturing capability to deliver high-performance, cost-effective, quality products.

In 1965, Gordon Moore, co-founder of Intel, was preparing a speech and made a memorable observation. He observed that device complexity doubles about every 18 months. This observation is now known as Moore's Law. While originally intended as a rule of thumb, it has become the guiding principle for the industry spearheading the delivery of ever-more-powerful semiconductor chips at proportionate decreased costs. Intel has expended enormous resources to meet the predictions of Moore's Law through factory modeling, knowledge management, operational and simulation modeling, capacity supply line management using Goldratt's Theory of Constraints, and defect yield monitoring. These techniques are described in detail in this issue.

Among these techniques is Intel's proven Copy EXACTLY! methodology for factory ramp and high-volume manufacturing, which is described in detail in this issue. Copy EXACTLY! enables Intel to bring factories on-line quickly with high-volume practices already in place; hence, decreasing time to market and increasing yields. Copy EXACTLY! solves the problem of getting production facilities up to speed quickly by "copying" everything--process flows, equipment set, suppliers, plumbing, manufacturing clean room, and even training methodologies--from the development plant to the volume-manufacturing plant.

As we near the new millennium, the semiconductor industry is getting ready for the transition from 200mm to 300mm wafer size. This is a major milestone for the industry, and teams are in place at Intel to implement the transition. An interesting retrospective look at how the 300mm standard was selected is described in another paper in this issue.