• The functions of system LSI become more and more complicated

Current requirement
• Data processing
• Compliant to new formats

Further expand requirement
• Innovations of the user interface
• Recognizing “outside”

Requirement of processing performance

Trend

2007 ITRS page 10, Figure SYSD7
SOC Consumer Portable Processing Performance Trends

Ex. Smile detection technology
- New functions require increase of # of processors

TAT: Turn Around Time
SW: Software

Short TAT requires SW solution
Impermissible to increase the consumption of electricity
AMP: Asynchronous Multi-Processor
• SMP: Symmetrical Multi-Processor
• Complex SMP and Many-Core
It will happen when complex SMP is introduced into
• Problem area: design, implementation & debug
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Optimize hierarchy memory access

Increase self-propelled periods

Increase max parallel degree

Replace to parallelizable

Increase self-propelled periods

Optimize hierarchy memory access
• Increase of the fault due to the programming difficulty
• Increase of the difficulty of the debugging work itself
Implementation & debugging issues are at the forefront.

Communication between SMP becomes important.
• The challenge of the productivity is late considerably

Parallel algorithm, API for parallel computing, automatic parallelization etc..
- Backward compatibility covered the time lag

HW: Hardware
• HW, SW & tools have to tackle it in a cooperative way!
• Shift to the Many-Core depends on the SW productivity
• It requires cooperation among HW, SW & tools