The New Wealth of Nations
"If capital is what produces a stream of income, then it follows that knowledge is a form of the new capital... Information capital can be more critical to the future of the American economy than money capital."

Walter Wriston
Former CEO, Citicorp
“Standards of living rise not because people work harder but because they work smarter.... Economic progress is the replacement of physical exertion with brain power.”

Prof. Lester C. Thurow, MIT
MIT Economist
KNOWLEDGE SYSTEMS EXIST OR ARE BEING DEVELOPED FOR:

- Medical diagnosis and treatment
- equipment failure and diagnosis
- manufacturing planning (configuration)
- chemical analysis and synthesis
- genetic engineering applications
KNOWLEDGE SYSTEMS EXIST OR ARE BEING DEVELOPED FOR:

- mineral exploration (geologist's advisor)
- nuclear power reactor monitoring, advising, operations planning
- advising about computer software use
- diagnosing factory failures
- financial services advising
KNOWLEDGE SYSTEMS EXIST OR ARE BEING DEVELOPED FOR:

- image understanding
- oil well log-data interpretation
- military electronic and acoustic signal understanding
- military threat assessment
- oil well drilling diagnosis
CLAIMS

A way to achieve two to three orders of magnitude speed-up over current expert systems

Provide a methodology for exploiting multiple levels of concurrency

Provide a programming environment, including languages, for developing concurrent expert systems

A hardware systems architecture supporting this methodology
RESEARCH STRATEGY

- End-to-end, integrated systems approach from applications through machine architectures
- Application-driven, empirical research methodology
- Recognition and exploitation of parallelism at all system levels
- A focussed "vertical slice" through the design space
- Machine simulation only
SYSTEM LEVELS

Level 1: Applications

Level 2: Problem Solving Framework

Level 3: Knowledge/Data Representation and Management

Level 4: Programming Language

Level 5: Hardware System Architecture