New Ideas

- Chip reconfigures into VLIW, MIMD, Streaming, and TaskScalar morphs on demand within application
- Polymorphism at every stage of the system: synthesis tools, compiler, backend builder, and morphware
- Novel hardware to enhance programmer productivity in parallelizing and debugging code

Impact

- M3T polymorphous hardware included in Blue Gene/C (Cyclops) chip
- M3T speeds up Sphinx speech processing about 2.5x times through polymorphism
- Estimated: 60x reduction in size, weight, and power per speech channel; 20x reduction in cost per speech channel
- M3T debugs data races 100x faster than current state of the art

Schedule

Dec 2002: Evaluation of the HW and SW support for Streaming in M3T
Dec 2002: Integration of the tools, which include synthesis, compiler, backend, code gen, and simulators
Feb 2003: Full evaluation of the TaskScalar compiler and morph
Apr 2004: Implementation of the full soft-core for the Blue Gene/C (Cyclops) chip