Edwards Group: Domain-Specific Languages for Embedded Systems

Compiling the real-time language Esterel
Synchronous concurrent real-time language
Threads advance in lockstep to a global clock
Compiler translates it into hardware and software
Simplifies real-time HW/SW development

Domain-specific language for device drivers
Compiler automatically generates boilerplate code
Makes drivers easier to write
Possible to automatically verify drivers
Portable: Compiler does the porting across OSes
Verification Library Language

- Allows users to write programs that check programs
- Verification is part of development
- Adding checkers as easy as adding functionality

Program porting tools

- Infer missing functions; report missing APIs
- Report on dependencies
- Remove unneeded code, functions, and files
- Algorithmic program rewriting
- Goal: minimize tedious work