

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



Edwards: Compiler Technology for Better Software Development

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