

# Using formal methods to generate a program

Mathematical description of the problem

*Refinement  
steps*



Proof of correctness



Executable code  
or hardware design

# Examples

## **Hardware design** (VHDL, Verilog)

- ✓ Used by semi-conductor companies such as Intel

## **Critical embedded software** (B/Z, Lustre/Esterel)

- ✓ Urban Transportation  
(METEOR Metro Line 14 in Paris by Alstom)
- ✓ Rail transportation (Eurostar)
- ✓ Aeronautic (Airbus, Eurocopter, Dassault)
- ✓ Nuclear plants (Schneider Electric)