A Ball and Cool Computer

Professor Jim Austin, Dept of Computer Science,

University of York & Cool Computers Ltd

Dr Andrew Smith, Research Computing Support

University of York

Addresses issues with current systems

- Large complex designs
- Server infrastructure that has not changed for 50+ years
- Expensive and difficult to manufacture
- Requires significant support infrastructure

Features

- Compact 3D design within a small volume area
- Quick and easy to build
- Scalable from one to millions of processors
- High connectivity between processors
- Very low cost
- Can be cooled by de-ionised water, or air
- Low power
- Flexible architecture
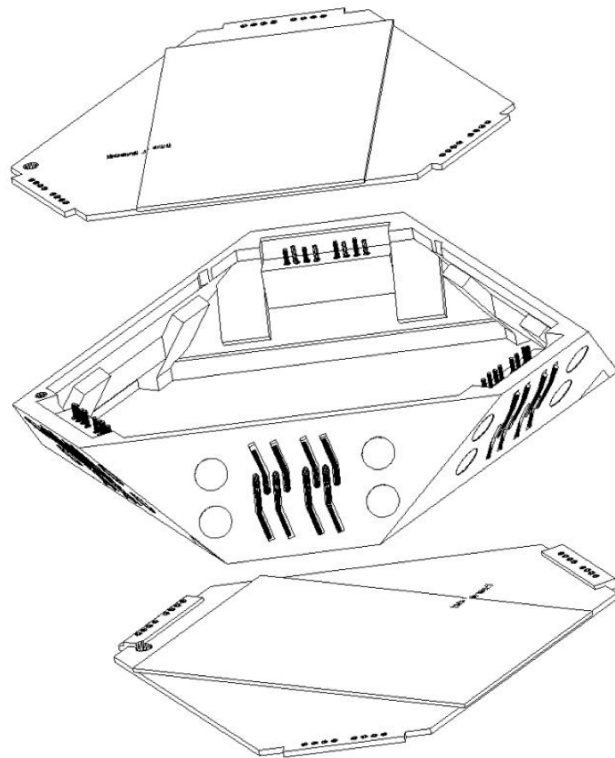- No specialist knowledge required to build
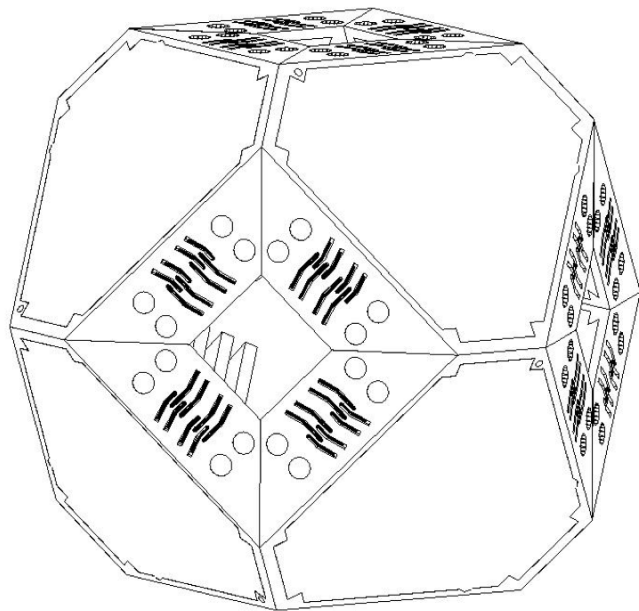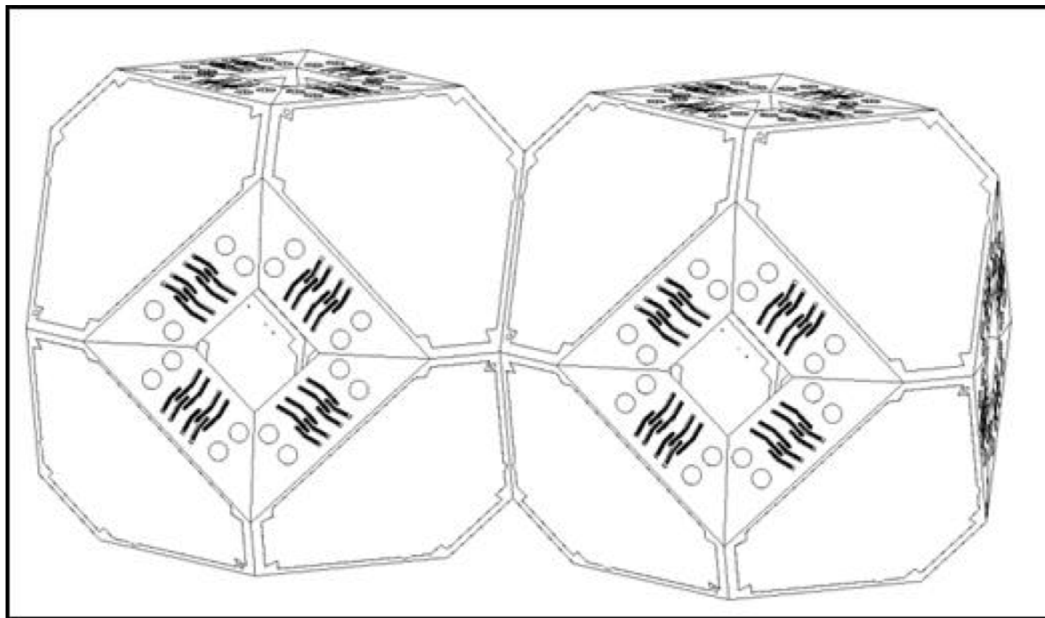- Very low start up costs
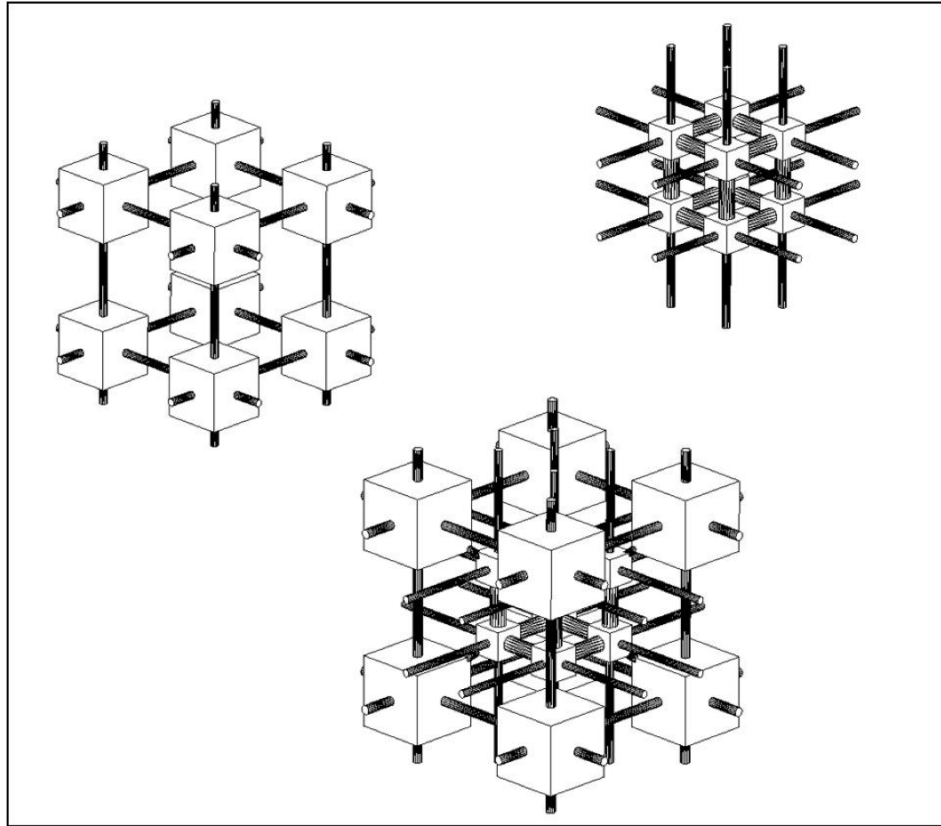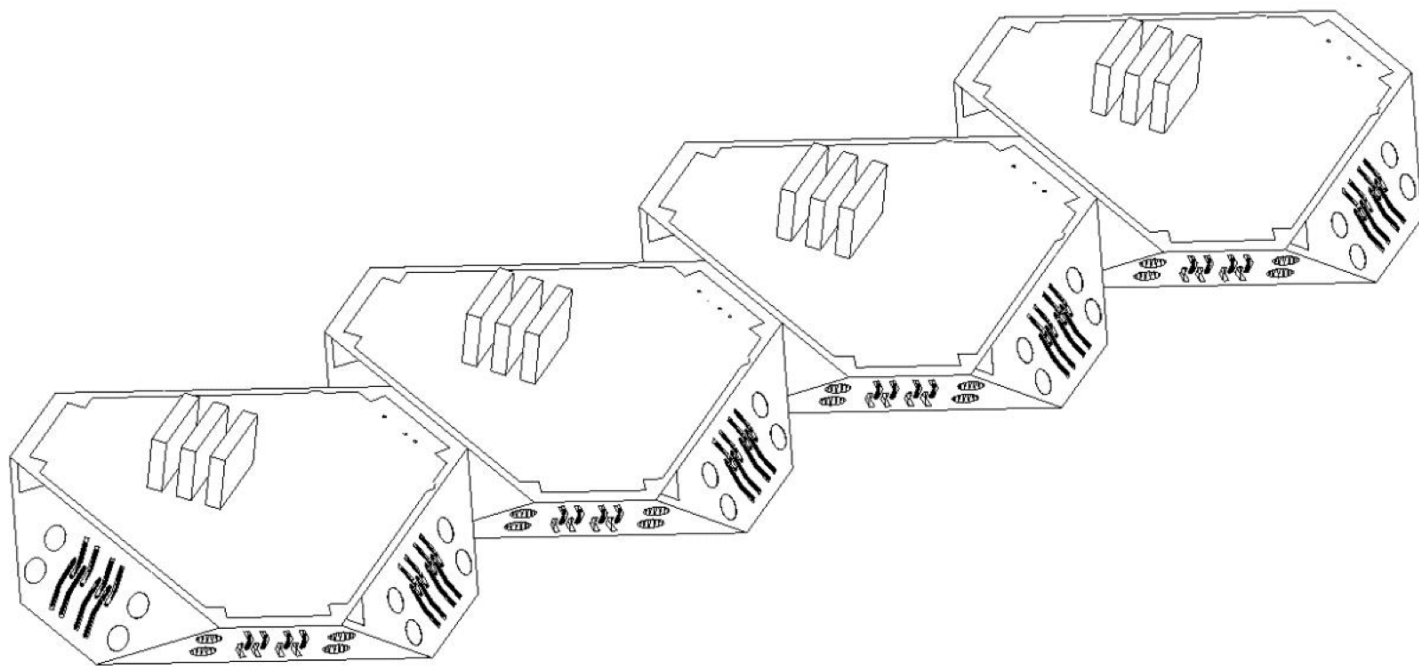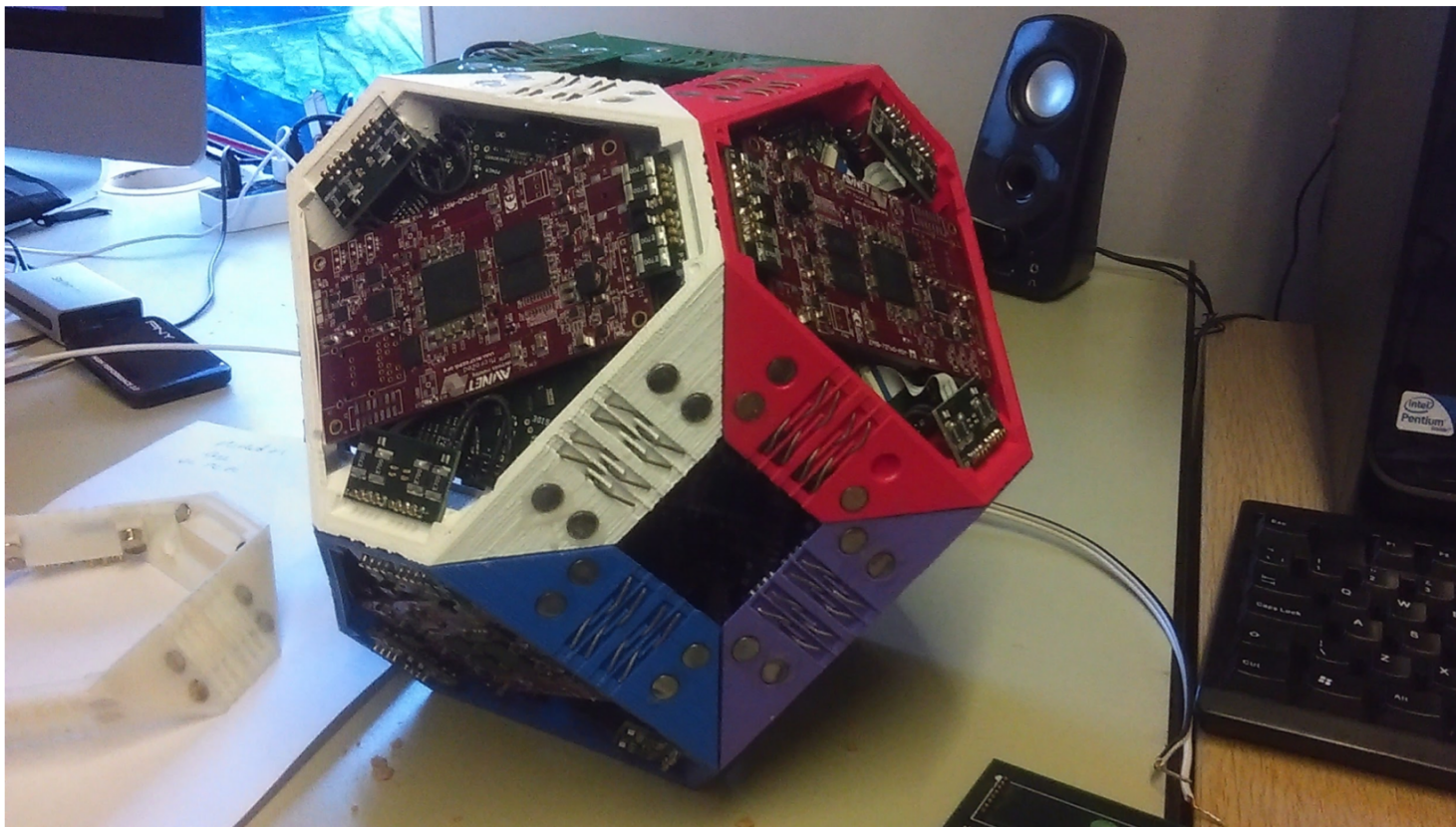
Hypercube
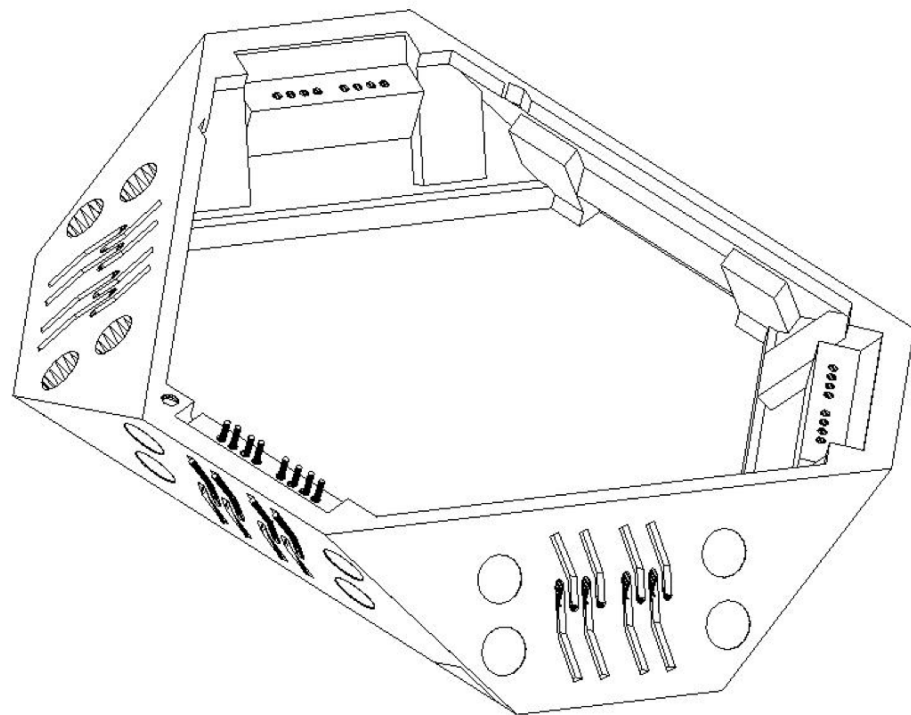
Tile - Cool Plate

Processor Plates

Ball - 8 tiles

Two Balls

Tiles are special - locks flat and at an angle

Prototype - two Zynx processors, ARM+fpga per plate
16 in total

- Single Board
- Single Processor (ARM M0+)
- Six Configurable Serial Links
  - I2C
  - UART
  - USB
- Tiles can be peripherals
  - Display
  - Sensors

Hobby Version