On Board Computing

Hardware Description (the tools)

- **Microcontroller**
  - Atmel AT91M40080
    - ARM CORE – (used in iPhones and PSP)
    - Peripherals like :
      - Watchdog (and other)Timers
      - USART, SPI, I2C and other communication channels
- **Memories**
  - PROM
  - NVRAM

These are the tools that make up the brain of the satellite. Interconnecting these to each other and the rest of the satellite is the main goal

Software (what we do)

- Functionality
  - Communication – sending down the right data in the right format, at the right times.
  - ADC - figuring out exactly where the satellite is … and keeping the satellite where it should be.
  - Health Monitoring – is everything else doing what it's supposed to ?
  - Data storage – maintaining the "ship's" log.
- Scheduling
  - Making sure all the above stuff get's done on time.

The perks

- Hardware:
  - Work with state of the art miniature computers that you can depend on to get the job done.
  - Learn the ins and outs of embedded computing … the cell-phone is a breeze after this.
  - Set up communication interfaces and work with all the protocols that come with them.
- Software
  - Build a rudimentary operating system from scratch.
  - Design crash-proof algorithms that others rely on.
  - Experience the joys (and pains) while developing the software that controls an entire satellite.