Aqua-OS
Environmental factors and User preferences

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**Underwater characteristics**

- Long operating time
- Robustness
  - External
  - Internal
- Application diversity
- Powerful hardware
- Automation and maintenance
- Constrained by environment
- Communication costs more energy
Design Approach

- Aqua-OS should
  - Be aware of the underwater environment
  - Consider both software and hardware
  - Optimize the design based on
    - Software and hardware constraints
    - Application requirements
Environmental factors

- Power failure of peripheral devices
- Temporarily lost of underwater network connection
  - Cased by unstable channel condition:
    - Estuary areas
    - Tidal actions
    - Weather changes
- Sensor node lost of control
- Sensor node damage
  - Fishing boat
  - Storm
  - Corrosion
  - Military
- Noise pollution
- Energy harvesting
User preference

- **Application properties:**
  - Typical applications are mission critical
  - Long operating time
    - Scientific exploration
  - High data rate
    - Stream video/audio
  - Low delay
    - Submarine detection
  - Mass and robust storage
    - e.g. Solid state or flash drive

- **Desirable features**
  - Highly reliable and available
  - Customizable, reconfigurable and reprogrammable
  - Easily maintained
  - Deployment friendly
  - Environment-awareness
    - e.g. Turn off the node when inclement weather is detected