

Aqua-OS

Environmental factors and User preferences

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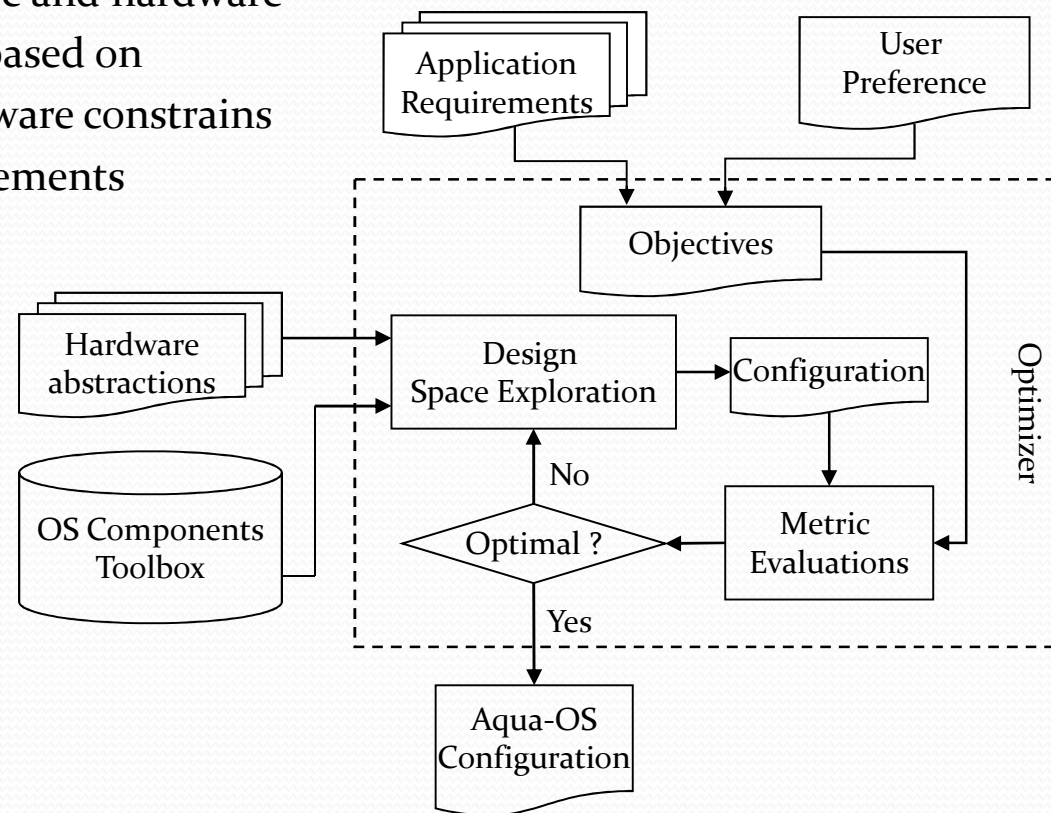


Underwater characteristics

- 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 constrains
 - 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