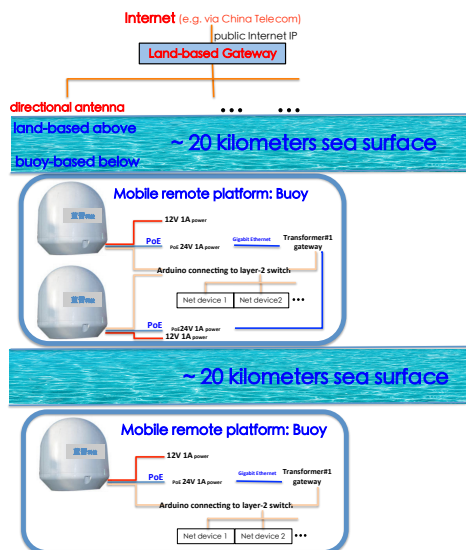
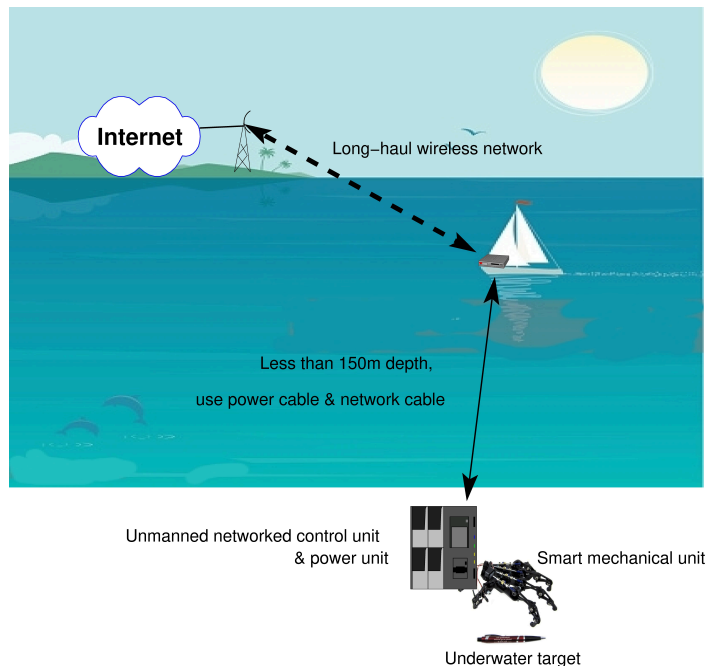


RRTRANSFORMER#1: A Long-haul Wireless Mesh Network Infrastructure of Unmanned Buoys for Underwater Sensors

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- **Unmanned ocean exploration:** The State Oceanic Administration (SOA) requests that the unmanned buoys must work autonomously for at least 60 days without human on board
- **Localized and precise knowledge acquisition:** The presence of a set of automated vehicles, e.g., buoys and unmanned boats, is needed in a underwater event's neighborhood to do localized and precise information collection



Technical specification

- Dimensions (including a directional antenna): 60cm (height) × 90cm (diameter)
- Device operation temperature: $-30^{\circ}\text{C} \sim 70^{\circ}\text{C}$
- Overall rotating weight: 8kg
- Number of rotating axes: *single* (for water surface or ground surface communication), *double* (for aerial communication)
- Rotating speed: 20°/second
- Overall power consumption (including mechanical operations, radio transmissions and computer operations): 40 watts (maximum), 20 watts (average)
- Vertical target aiming angle: $\pm 30^{\circ}$ maximum, or totally 60°
- Horizontal target aiming angle: unlimited
- Antenna gain: 21 dBi
- Antenna polarization: dual linear
- Frequency range: 5179 -- 5875 MHz
- Transmission power: 27 dBm
- Communication speed: 10Mbps at 20km range

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