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# Memo

# D4.1 First version underwater vehicle integrated with oceanographic sensors

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|---|---|---|---|

**DISTRIBUTION**

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This memo gives a quick comparison of the two vehicles we plan to use for INDORSE experiments. Those two vehicles, while using similar platform (LAUV), are equipped with widely different sensor suites as one – the Fridtjof – is targeted to benthic survey and ocean floor mapping and the other – the Harald – is targeted instead for oceanic water column surveys and mapping of bio-chemical properties of the water masses.

While this distinction result on widely different hardware the software underneath share the same software architecture and control components. Beyond this the two vehicles can be seen as complementary which give greater opportunity for distributed autonomous collaboration (as one vehicle sensory input could trigger new objectives more fit for the other vehicle and vice-versa)

The table is structured as follow:

- Description of the target application of the assets
- General properties of the vehicle themselves
- Communication devices
- Localisation devices/capabilities
- Application specific sensors

| | LAUV FRIDTJOF | LAUV HARALD |
|---|---|---|
| **Target applications** | Acoustic mapping<br>Bottom mosaic building<br>Substrate identification<br>Benthos characterization | Water column characterization<br>Environmental profiling<br>Upper water acoustic tracking<br>Sound speed measurement |
| **Length (cm)** | 180 | 240 |
| **Weight in AIR (kg)** | 25.8 | 32.1 |
| **Max depth (m)** | 100 | 100 |
| **Speed (m/s)** | 0.5 – 2.0 | |
| **Endurance (H)** | 8 | 24 |
| **Data storage (Gb)** | 16+64 | 16 |
| **CPU** | AMD Geode LX 800 (x86 architecture) | |
| **Communication** | WLAN (1km) | |
| | GSM 3G | |
| | acoustic modem (1km)<br>Evologics S2CR 18/34 USBL | |
| | Iridium satellite | |
| | Emergency acoustic pinger (2km) | |
| **Localization** | GPS | |
| | Doppler Velocity Logger (DVL),<br>Nortek DVL 1MHz | |
| | Attitude & Heading Reference System (AHRS) aided by DVL | |
| | IMU<br>Microstrain 3DM GX4-25 | |
| **Other sensors** | HD downward looking camera<br>Lumenera Le165 w/ LED ligthing | Conductivity, Temperature, Density (CTD)<br>Seabird SBE 49 FastCAT |
| | Sidescan sonar<br>Deepvision OSM2 | Furomter/turbidity<br>WetLabs EcoPuck Triplet |
| | Forward looking sonar<br>Imagenex 852 | Oxygen<br>Aanderaa Optopode 4831F |