Marine Exploration Research

# Presentation Structure

## Terminology

### Drone structure

## Ocean Vehicle Taxonomy, Total Addressable Market & Competitors (3 slides)

### Commercial Applications

* Baseline Environmental Assessment
* **Pipeline Survey**
* Debris/Clearance Survey
* Emergency Response
* Water Quality
* Ecosystems Assessment
* Route Survey
* Charting
* Pre/Post Dredging Survey
* Asset Location
* Marine Archaeology
* EEZ Survey
* Deep Sea Mining
* Oceanography
* Construction Support
* Ship Hull / Infrastructure inspection
* Shipwreck or crashed underwater aircraft localisation (sonar and video imaging)

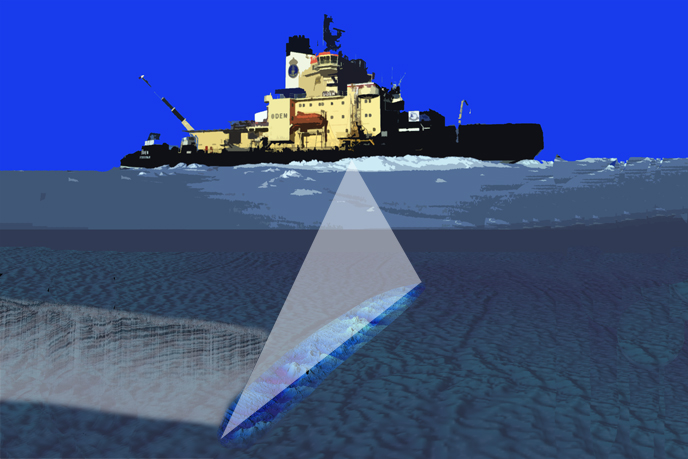
### Research Applications

* Fisheries Research & Habitat Mapping
* Acquaculture
* Climate Change
* Under Ice
* Emergency Response
* Water Quality
* Ecosystem Assessment
* Marine Archaeology
* Deep Sea Ecology/Seabed Investigation
* Ocean Observatories
* Oceanography
* Geophysics data gathering (sediment analysis, seafloor classification)

### Defense Application

* Organic Mine Countermeasure
* Hydrographic Survey
* Area Search
* Surveillance & Reconnaissance
* Expeditionary Mine Countermeasures
* Mine Countermeasures (MCM)
* Unexploded Ordnance (UXO)
* Rapid Environmental Assessment (REA)
* Explosive Ordnance Disposal (EOD)
* Intelligence, Surveillance, and Reconnaissance (ISR)
* Platform Surveillance for Homeland Security
* Critical Infrastructure Protection

### Bathymetric



#### Industries

* Tsunami Predictions
* Oil & Gas
  + This is by far the largest end-user industry worldwide. Its main interest is on the continental shelf, where tidal and weather prediction are important, and where bathymetry is obtained from comparatively local surveys. However the relationship between gravimetric and bathymetric data is important, and as exploration extends further over the edge of the shelf, all types of deep-water information become of increasing interest. The exploitation of this interest is discussed below.
  + Surveying for the industry is carried out by survey companies for bathymetry and by geophysical companies for seismic exploration, which also involves a knowledge of local bathymetry. About 26% of the survey industry, (worth about US$200 million annually), and virtually all the geophysical industry (with a marine component worth about US$600 million annually) work for the oil and gas end-user. The oil and gas companies carry out no surveying for themselves.
* Fishing
  + The majority of commercial fishing is on the continental shelf, but migratory fish such as Tuna are caught in the upper levels of the deep ocean, and the industry needs better ocean modelling to identify uprising nutrients to predict fish stock variations and movements generally. This work, however, is mainly carried out by government fishery research laboratories, which also carry out specialized fish stock assessment surveys. Discovery of hitherto unknown shallow waters can lead to development of new fishing grounds, but the potential is small in the context of the industry as a whole.
* Communications
  + In spite of satellite contributions to communications, fibre-optic cables are an important element of the industry. There are about 250 significant submarine cables in existence with a total length exceeding 400,000 km. The choice of route depends on the level of cable armour and need for burial as well as the shortest distance and the need to avoid obstacles. Thus the communications industry requires detailed route surveys for cable laying, and more general bathymetry for initial route planning. The surveys are carried out mainly by survey companies, and are estimated to be worth about US$24 million per year, though this fluctuates. Improved ocean modelling is also of interest. The high cost and international aspects of most projects results in cable systems being owned by consortia of companies (for example one trans-Atlantic cable involves 31 organizations). This makes it difficult for an approach to be made to the industry as a whole for support for global bathymetry.
* Waste Disposal
  + Waste disposal is becoming an increasingly serious problem as pollution controls and shortage of sites on land force up the cost of conventional disposal methods. If suitable methods can be devised to protect the environment, disposal in the deep ocean could become increasingly attractive economically. Global bathymetry with systematic coverage of abyssal plains and improved ocean modelling would be a necessary precondition.
* Deep Sea Mining / Mineral Extraction
  + The current industry is based on sand and aggregate extraction from the continental shelf. Future development of deep recovery of nodules depends on the cost relative to extraction from on-shore, and also on certain strategic considerations for countries without such resources. The technologies for deep recovery are being developed, but so far commercial extraction has not started to any great extent. Global bathymetry might be useful in determining potential sites in the rather distant future, when the deep ocean industry may be significant as resources ashore deplete.
* Wet Salvage
  + Wet salvage is the recovery of cargo and information from ships or aircraft that have sunk, as opposed to dry salvage, which aims to prevent the ship sinking. Wet Salvage from the deep ocean is a rare and expensive business, and though global bathymetry would be helpful, it is scarcely a significant economic force.
* Medical
* Climate Change Studies

#### Competitors

### Geological

#### Industries

#### Competitors

### Geotechnical

#### Industries

#### Competitors

### Chemical

#### Purposes

#### Competitors

#### Market

### Biological

#### Purposes

#### Competitors

#### Market

### Radioactive

#### Purposes

#### Competitors

#### Market

### Magnetic

#### Industries

* Mapping the basement surface and sediments in oil/gas exploration
* Detecting different types of ore bodies in mining prospecting
* Detecting metal objects in engineering geophysics
* Mapping basement faults and fractures
* Determining zones with different mineralization in logging as well as inspecting casing parameters
* Studying the magnetic field of the Earth and its generators
* A variety of other purposes such as natural hazards assessment, mapping impact structures and environmental studies

#### Competitors

#### Market

### Imagery

### Coring

* Are the drones able to perform coring?
* No mention of coring.
* Explain two types of coring:
  + Traditional
  + Vibracore
* Use

## Growth, Incumbents and Patents (2 slides)

As far as I understand, what VCs want to do is fund the growth of companies that are trying to capture a significant segment of a huge market.

### Fragile time advantage

### Unclear goals of growth

### Comparison to Satellogic & Amazon

### Possible exit strategy using risk management

## Operations, Lack of good funding targets & Fuzzy statements (1 slide)

### Lack talk about the operational requirements

#### On-land technician

#### Transportation

#### Servicing

#### Retrieval / Rescue

### License to Operate

#### Could impede dataset building

#### Could impede on-site jobs

### Fuzzy statements

#### Sonar software developed

#### Contract with US defense contractor

#### Machine learning initiated

#### Cloud architecture design initiated

## Final Thoughts (1 slide)

* The level of details and track record is comparable to that of a seed round
* Repeat the thing about risk management
* All in all I would be wary of investing in this company. First I would have to have a conversation with the management team and ask them the following questions:
  + D
  + D
* And then reconsider based on the extra information, but with the current level of information I am very sceptical.
* Of course I would like to know your opinion because I am sure that with your experience you probably noticed something I missed.

## Questions for Joey

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