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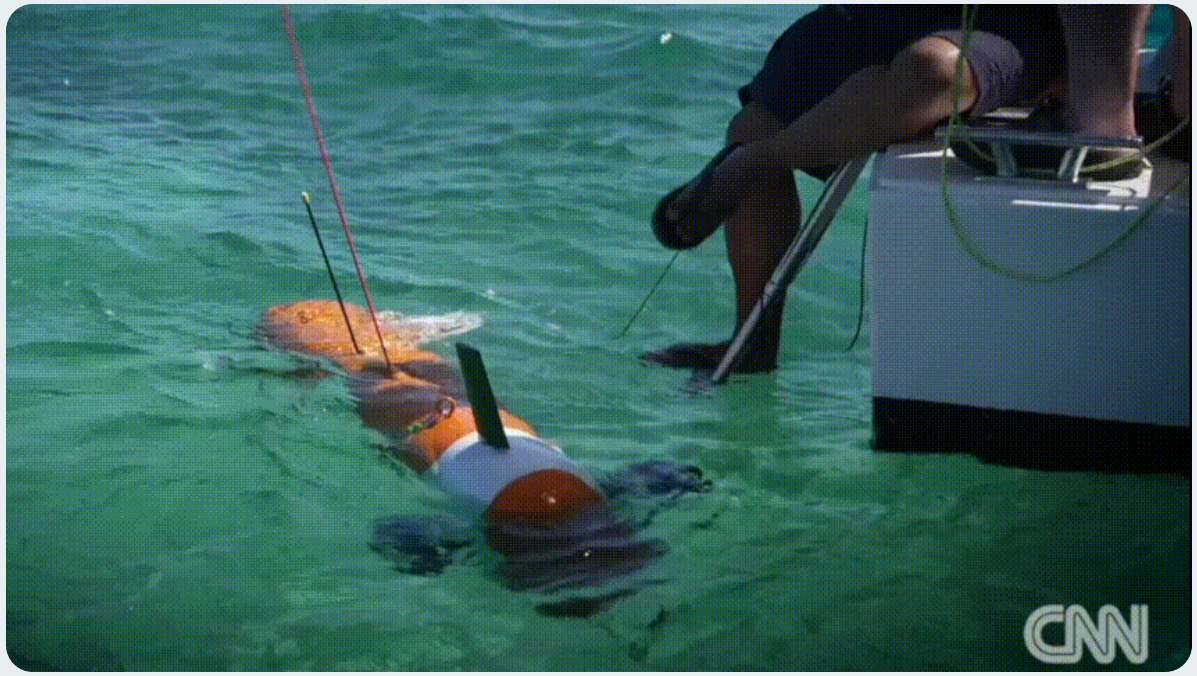
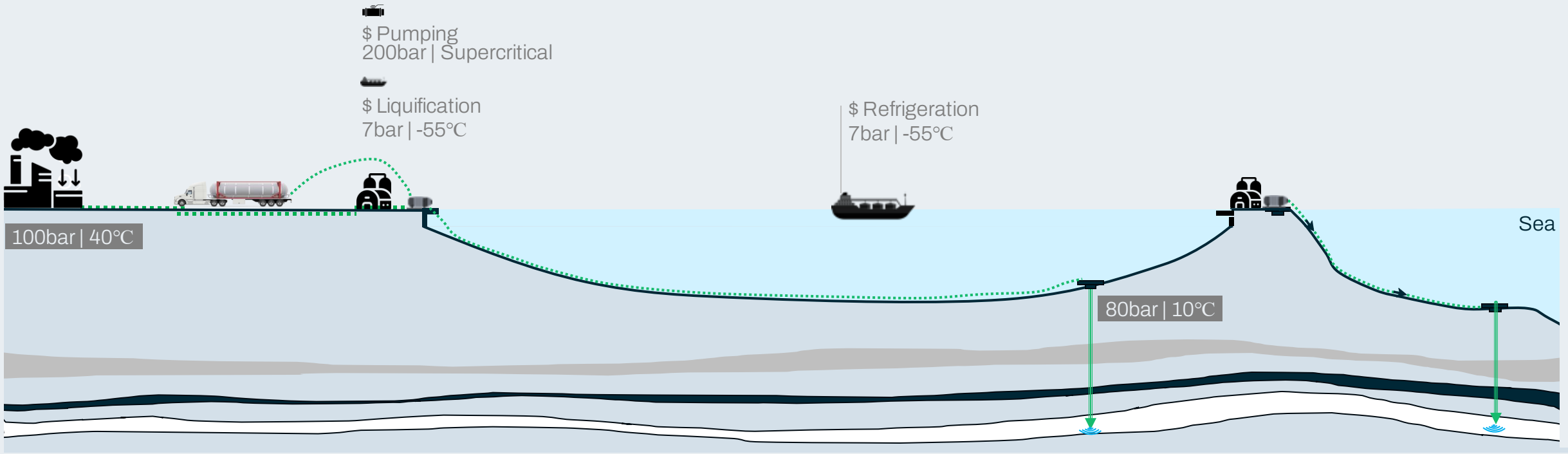


Shore to Shore & Underwater CO_2 transport

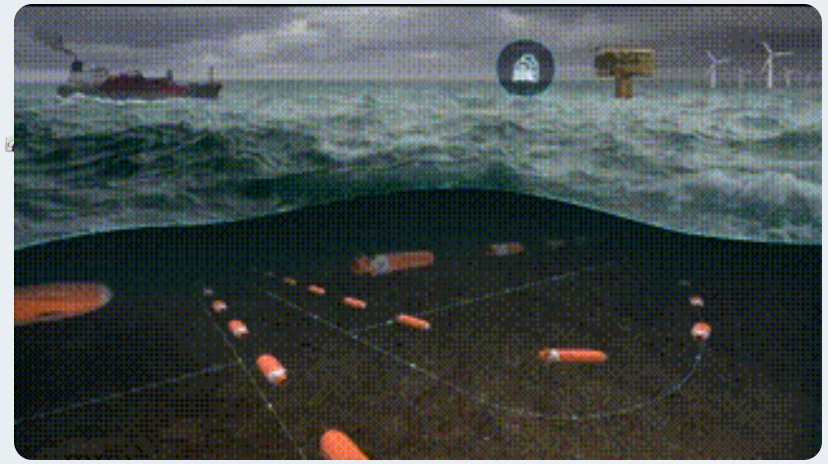
Dhruv Boruah
dhruv@oceanways.co

CO_2 Transport

	Slow to build	Expensive		Limiting
		CAPEX	OPEX	
	7+ yrs.	~$366m	~$34m	Seabed Interference, Flow rate
	3+ yrs.	~$98m	~$35m	Weather, Jones Act., CO_2 Specs



Oceanways Solution



Quick to build

14 months

Low cost

CAPEX

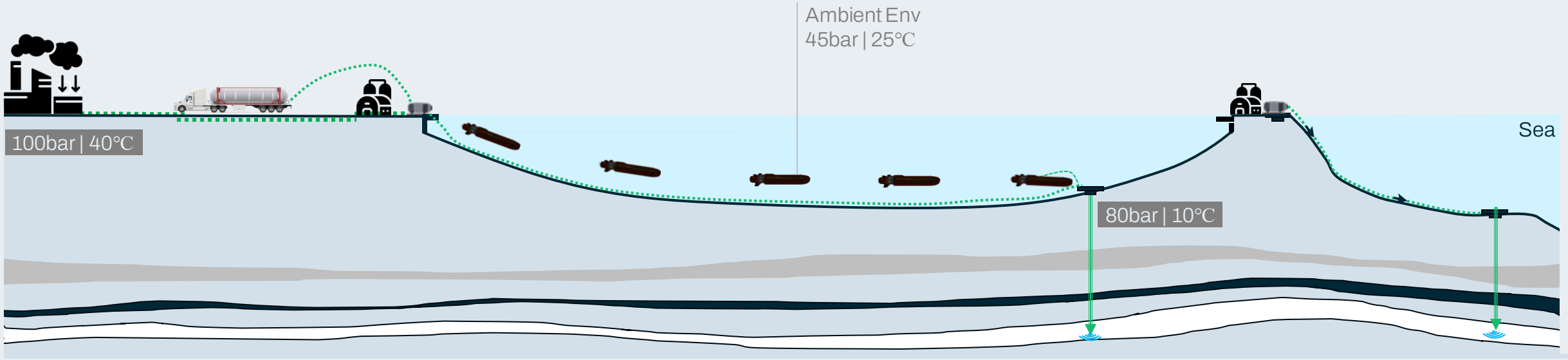
~$30m

OPEX

~$17m

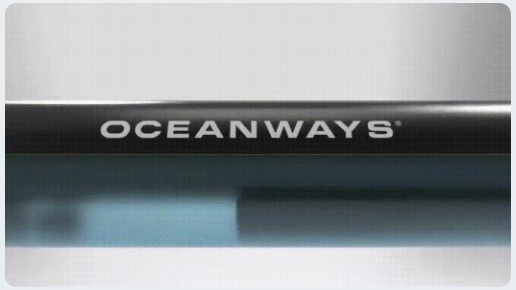
Flexible

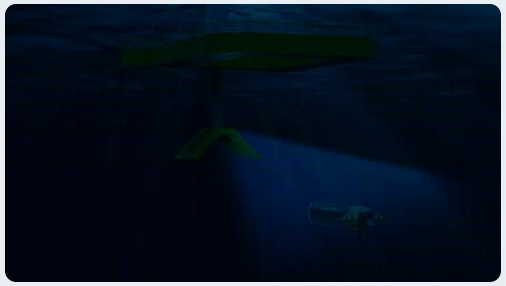
Phased scaleup, multi-spec, rapid manufacturing



Oceanways Solution

Hardware





Tanks: 9x 40ft
Cargo: 517 tons CO_2
Battery: 1,191 kWh
Speed: 4 knots

Software

Autonomous command/control/navigation
& fleet management software

Why now

AUV

BOM costs coming down

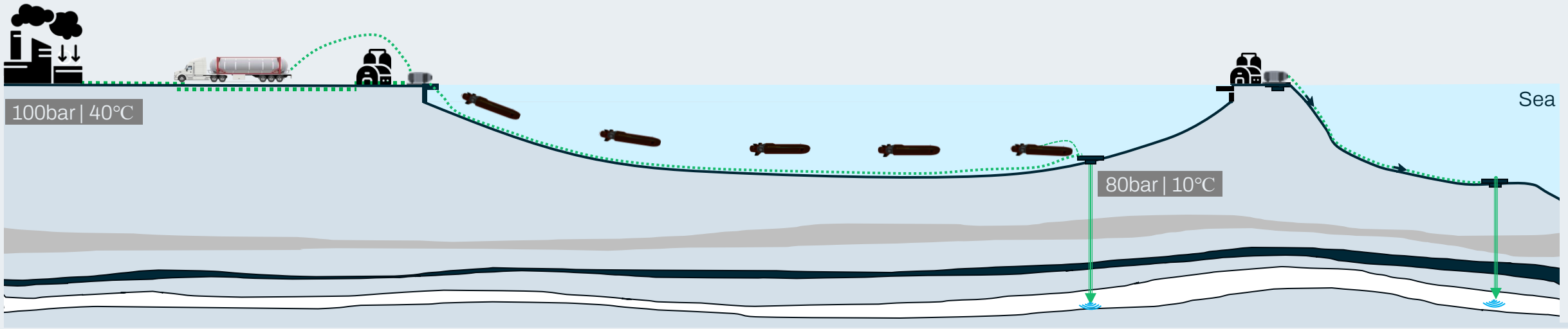
- ✓ Miniaturization & cost reduction of electronics
- ✓ Mass produced UAV electronics
- ✓ Advanced navigation software
- ✓ <100m depth water operations
- ✓ H_2 Fuel Cells for long range/ Li-ion battery cell mass production

Sweet spot

500k-2.5 mtpa

0-113 miles

10km | ~730tons | 50ton/tank | 14 tanks | 0.25knot



Network Design

Adaptable to existing harbors to harbor logistics with more ports & subs, to give much more capacity to load/unload. Offtake large volumes with more ports. Whatever solution it picked to bring it.

Distance: 100 nmi, **Speed**: 4 knots | **Submarines**: 36 | **Sub Refuelling**: 30 mins
Sub refill time per tank: 60 mins
Tank onshore fill time: 60 mins (NA since customer fills the tanks)

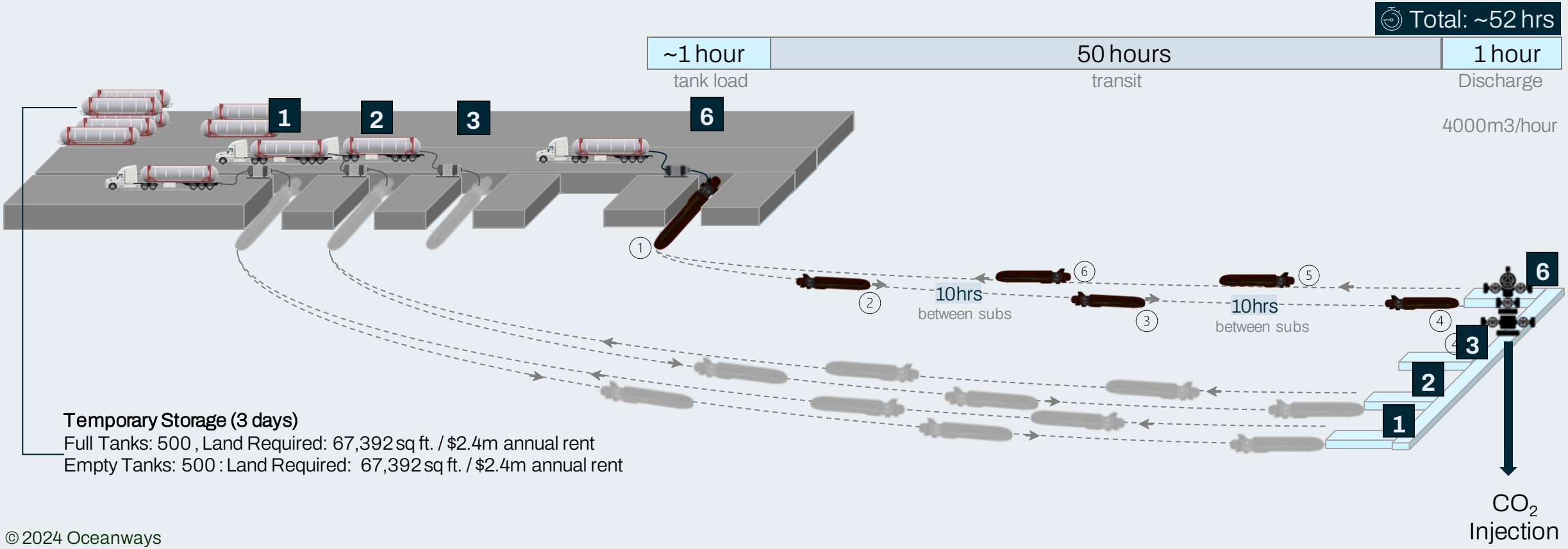
Subs Loaded Per Loop Per Day: 3
Total Subs Loaded Per Day: 18 (3x 6 loops)
Gas Tanks Moved Per Day: 162
Trucks Per hour: 7

Sub refill: 9 tanks parallel x 60 = 60mins
Sub refuelling: 30 mins
Total: 60mins = 1 hour

FLOW Rate: 50tons/hour

Subs per loop: 6
Loops required: 6
Loop time: ~68 hours

Tank discharge: 9 tanks parallel x 60 = 60mins
Total = 1 hr



Temporary Storage (3 days)
Full Tanks: 500 , Land Required: 67,392 sq ft. / $2.4m annual rent
Empty Tanks: 500 : Land Required: 67,392 sq ft. / $2.4m annual rent

CO_2 Transport Comparisons

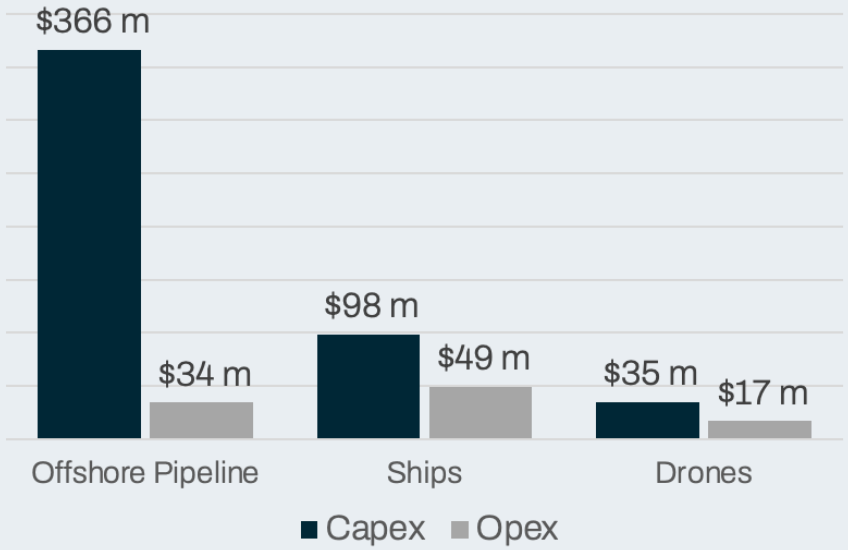
Ideal Site

2,500,000 tons CO_2/yr

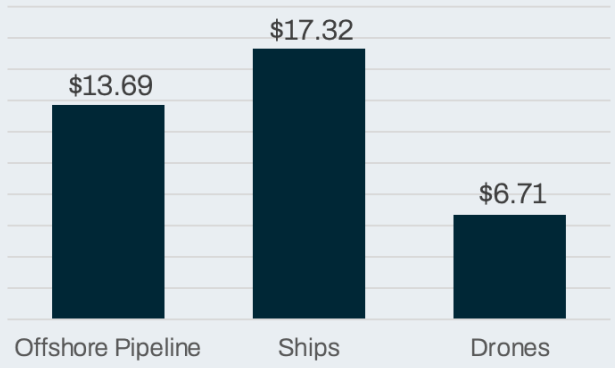
113 miles from shore

$12 per ton CO_2

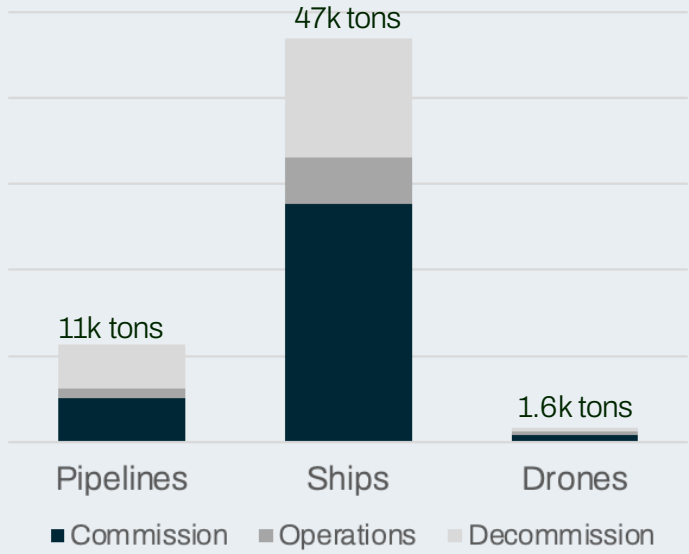
Cost/site



Transport cost/ton CO_2



Emissions/site

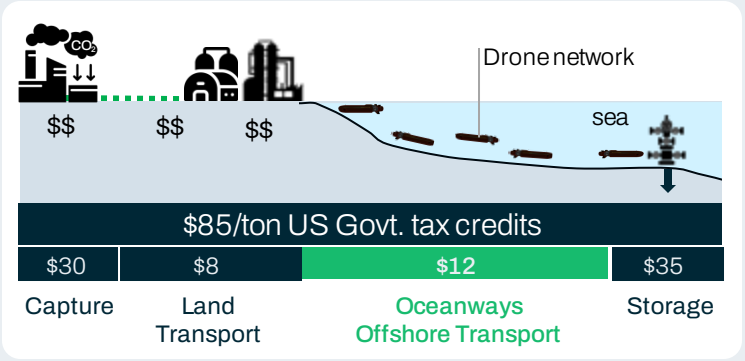


Transport as a service

1.5k
Drones
120 annual trips/drone

> **$12**
> per ton CO_2

> **44%**
> EBITDA

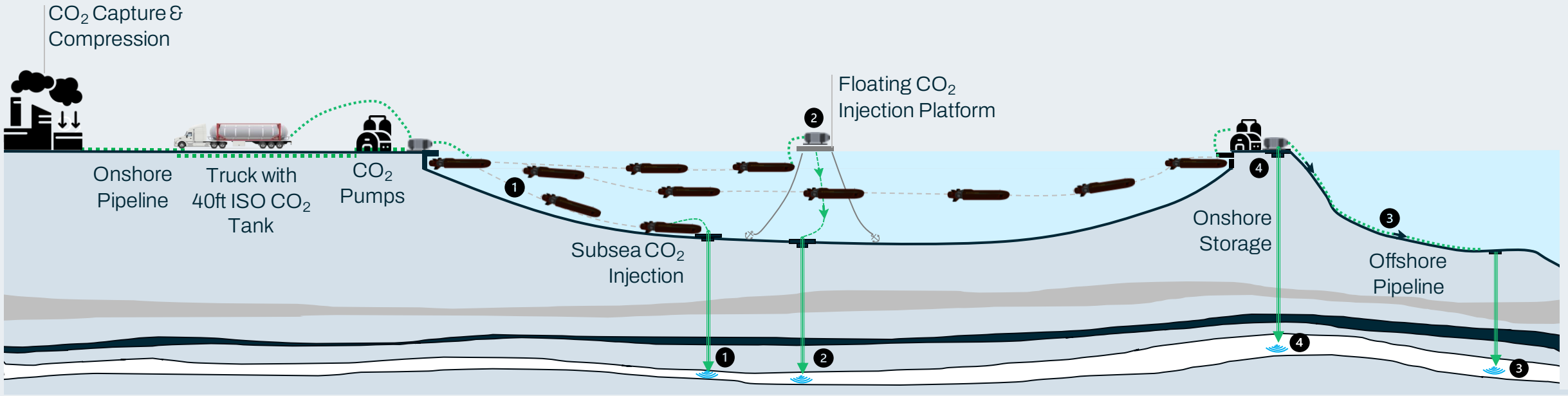


- ~517 tons CO_2 per drone
- 120 trips per drone/year
- Only 40 drones can transport 2,500,000 tons of CO_2 /year

517ton CO_2/drone * 120 trips * 1,500 drones * $12/ton CO_2 = ~$1bn ARR

Multi spec, intermodal, multiple source to multiple sinks

Only **40 drones** required to transport **2,500,000 tons** of CO_2 per year



Previous Experience

Hardware

20+ AUV patents and real-world experience from previous AUV build/operations

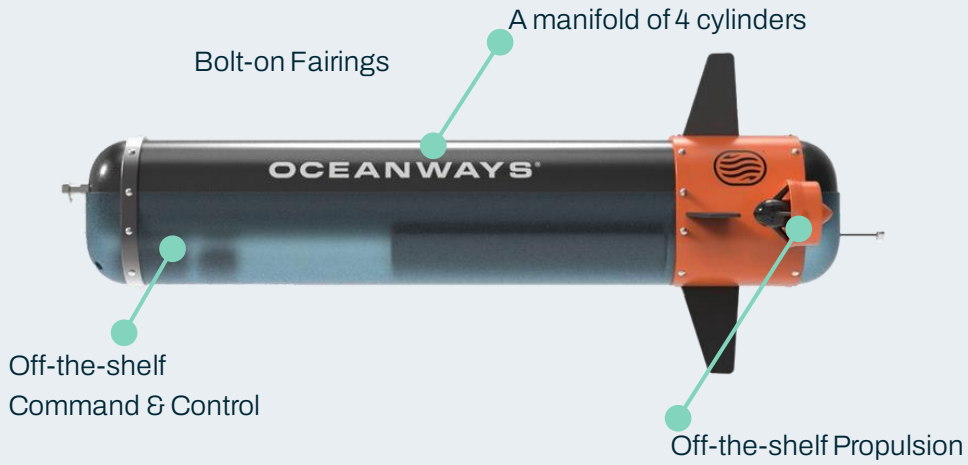
Software

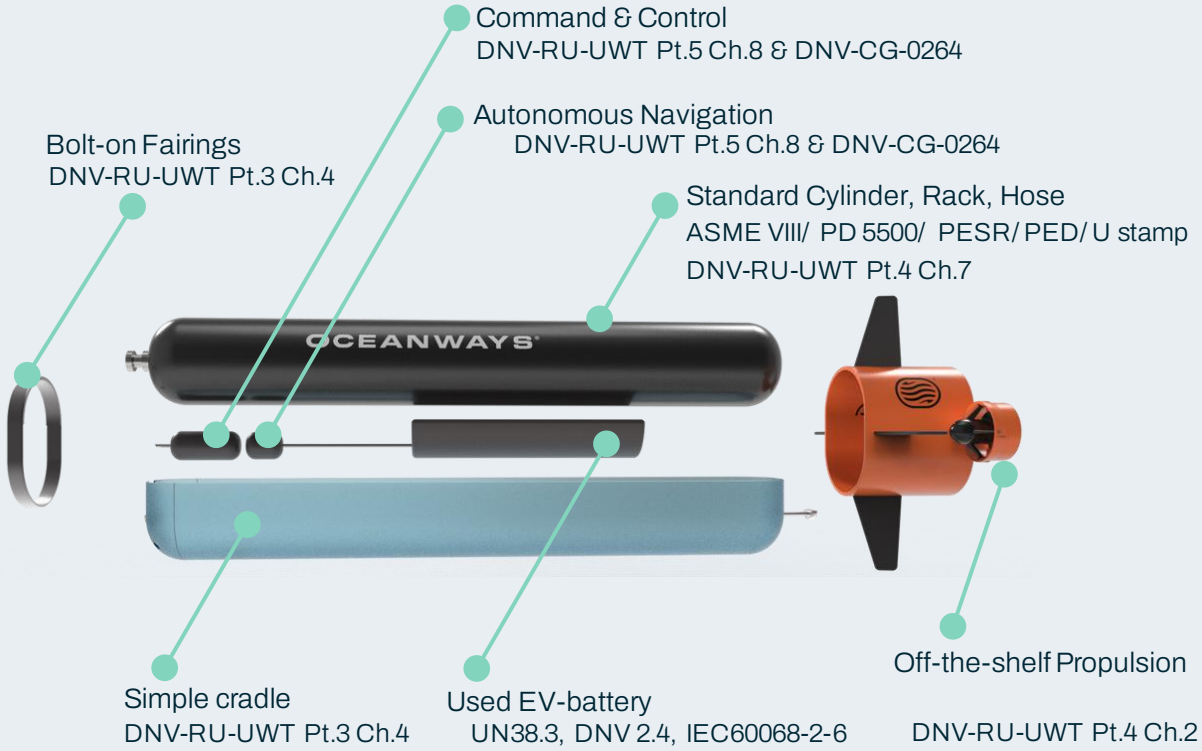
Autonomous command/control/navigation & fleet management software

- Simulator
- AI/ML Autonomous Planning/Navigation
- Fleet Management
- Multi vehicle operations

Path to classification

Identified Component Rulesets





*All DNV ruleset references to be confirmed during early classification process

AUV builders, operators & domain experts

Dhruv Boruah
CEO/Founder

GTM, Product & Strategy

Offshore sailor/Founder/ Engineer & MBA, IBM/Siemens, Climate solutions expert, Founded ocean nonprofit recognized by UK Prime Minister

Jonathan Pompa
VP Engineering

Engineering & Product

Built & operated underwater robots
14 patents on AUV, Scripps Institution of Oceanography, Carnegie Mellon University

Key Advisors

Rob Damus

MIT Massachusetts Institute of Technology

Capt. Steve Bramley (retd)

ROYAL NAVY

Dr. Suman K

SYZYGY PLASMONICS

Dr. Tip Meckel

TEXAS Bureau of Economic Geology

AUV: Autonomous Underwater Vehicles

Scalable, low-cost, low-carbon, regulatory light solution **ready for deployment in 14 months**

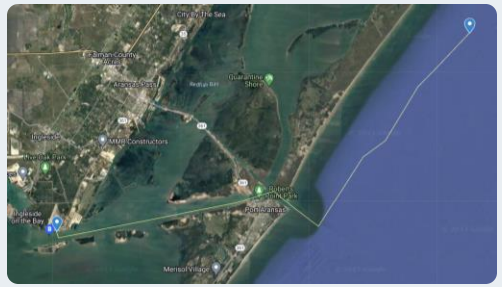
Timeline

2024

Prototype ready for pilot -
Hardware and Software

2025

Deliver pilot
Demonstrate to customers



Future

Commercial CCS Operations

2.5mtpa CO_2 | 40x Drones | 113 miles

The Ask

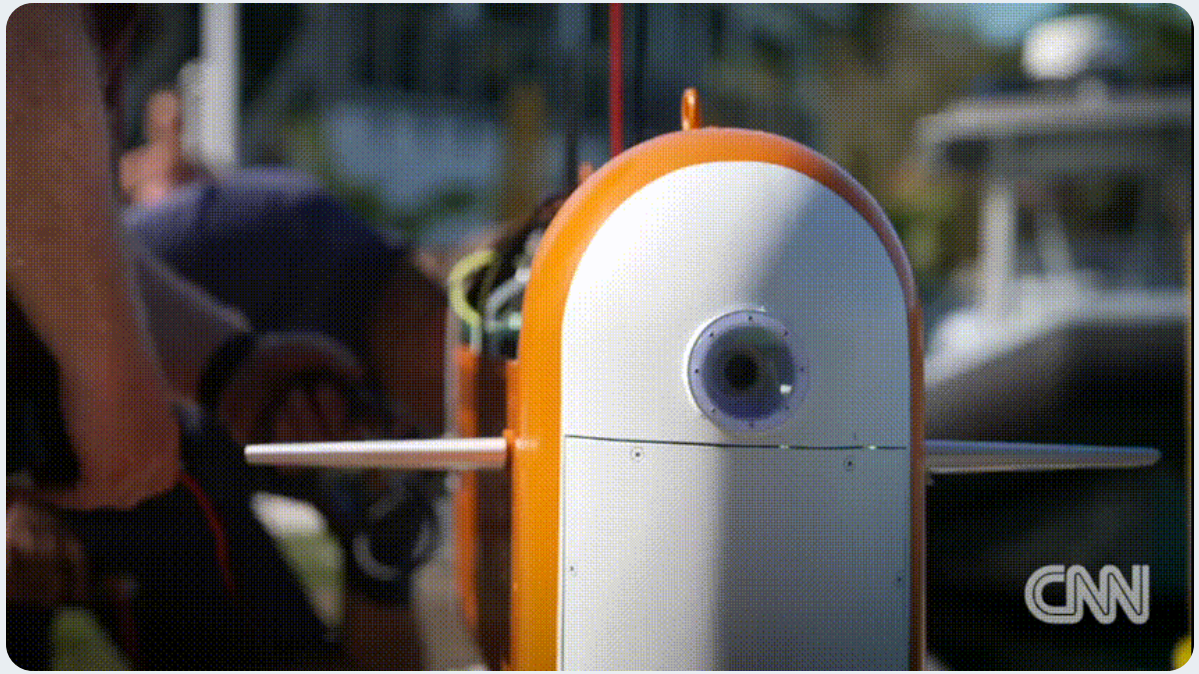
We have the technology, we have the team

Now, **we need to build & deliver joint pilots to validate demand.**

1. **Pilot use-cases**
2. **Consortium for Grant Funding Applications**
3. **Raising $2m SEED round**

OCEANWAYS®

Join our mission to accelerate your CCS projects!



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