OFF-SHORE DRILLING MANAGEMENT SYSTEM

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OUR TEAM

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OVERVIEW

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ABSTRACT

WANBIS Corp. hired our team to create an interface for their resource acquisition plan pitch to the government of F.I.N.. We were given time-series data on coastline, resource locations, and preservation priorities. We were tasked with the development of an algorithm and interface to identify optimal drilling locations, while also considering daily changes and preservation priorities.

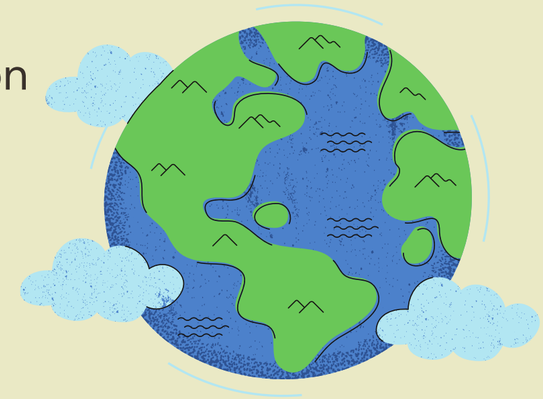
DATASET

01 Preservation

Datasets: Species, Coral Reefs

This type of dataset was prioritized due to the following considerations:

- Environmental Conservation
- Long-Term Sustainability
- Regulatory Compliance
- Community Relations
- Risk Mitigation



We weighted the data, as follows, while picking the rig's next location: Species - 30%, Coral - 15%

DATASET

02 Acquisition

Datasets: Oil, Precious Metals

This type of dataset was prioritized due to the following considerations:

- Economic Significance
- Industrial Applications
- Investment and Hedging
- Revenue Generation

We weighted the data, as follows, while picking the rig's next location: Oil - 30%, Metal - 15%

DATASET

03 Informational

Datasets: Temperature

This type of dataset was prioritized due to the following considerations:

- Extraction Processes
- Equipment Performance
- Safety Considerations
- Environmental Impact
- Climate Change Resilience

We weighted the data, as follows, while picking the rig's next location: Temperature - 10%

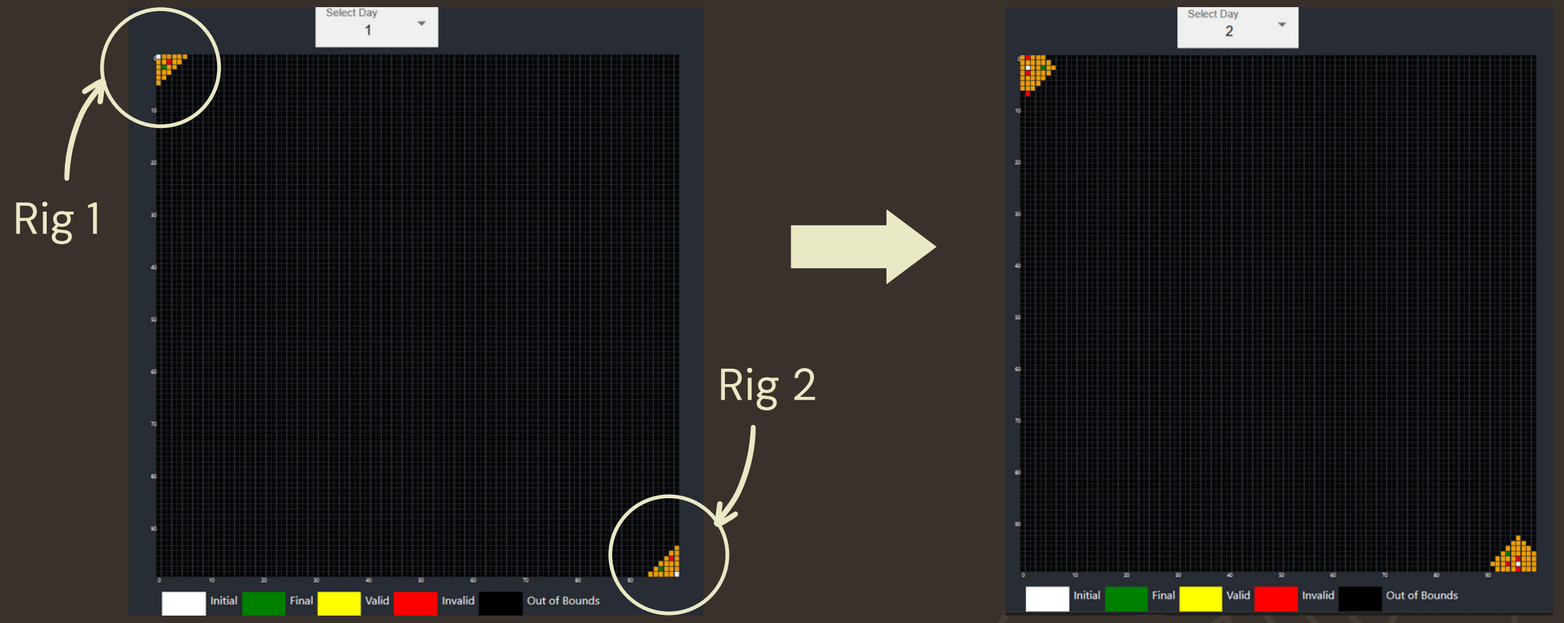
ALGORITHM

01 - Data Processing

We began by reading the selected datasets, then merging the data to get a complete view of all important values, lastly, evaluating the empty data cells by flagging if they were inconsistent. By default, values are assumed to be out of range until the algorithm verifies adequate paths.

02 - Radius Check

The algorithm reviews all possible configurations within 5 units of the Rig’s radius, optimizing the mining path based on available resources. This step also involves checking if Rig 2 is within 2 units of Rig 1's current location. In addition, if land or an inconsistent data point is encountered, it is registered as invalid.



03 - Scoring

Next, the algorithm determines a weighted score for each square in the radius by evaluating the values against their weights previously outlined in our Dataset section. The highest score is then chosen as the destination for the rig for the next day. Let it be known that higher scores mean higher priority.

04 - Repeat Check

In the case where resources are plentiful and the algorithm decides that the resources at the current position are optimal, the algorithm reduces the current positions resource quantity by 5% per day until the amount is no longer greater than an alternate path. This is necessary due to the rig reducing the amount of resources available when collecting from one location over an extended period.

COMMENTS

What we would have one differently

- Assign each rig a grid to work with
- Assign more rigs to the project (NOTE: Limited to 2 for this case)
- Host the application on a server so that it is accessible from the web

Features we are happy with

- Cohesive and interactive graphing allows users to explore individual sections of the world map for each day of the month
- We included color choices and fonts to support users with visual impairments such as color blindness and dyslexia

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DEMO & CODE REVIEW

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