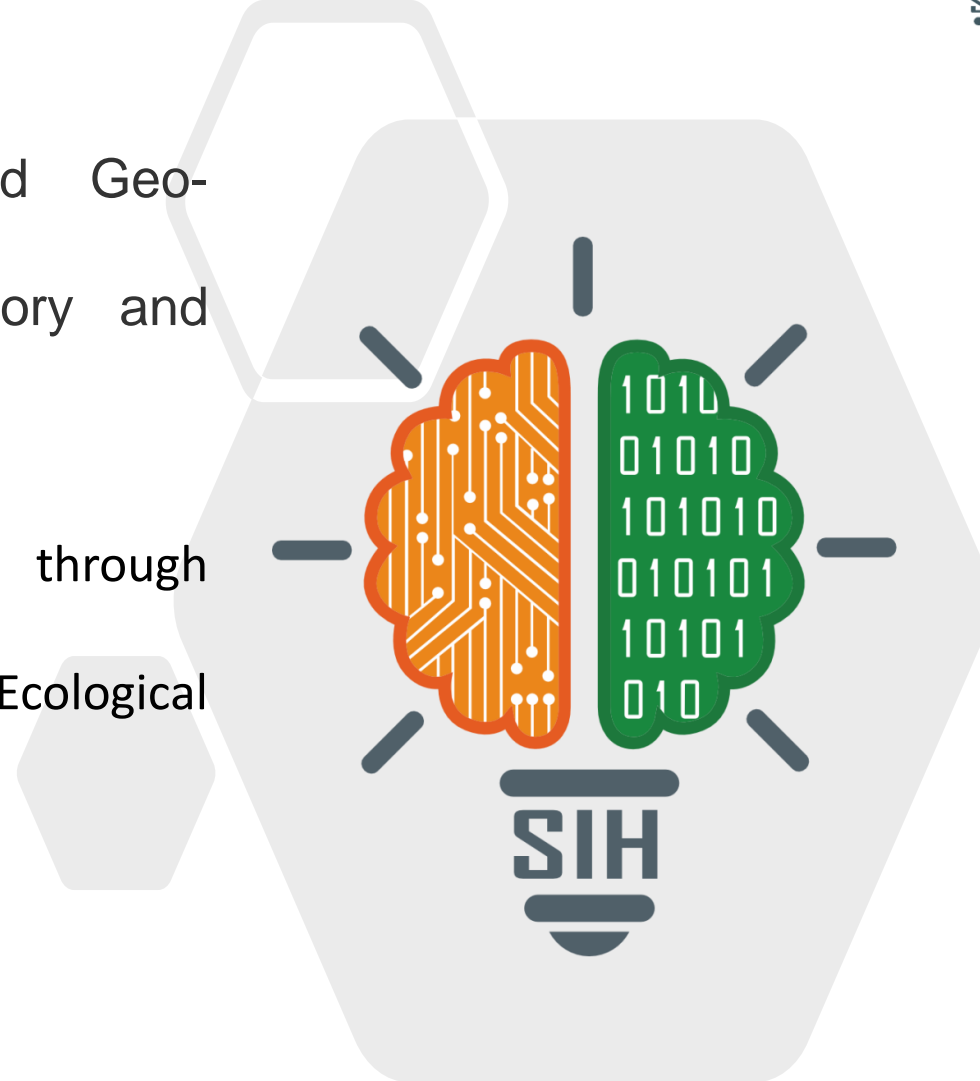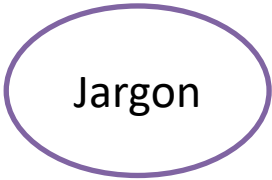# SMART INDIA HACKATHON 2024

- **Problem Statement ID –** SIH1657

- **Problem Statement Title-** Integrated Geo-Referenced Fish Catch Data Repository and Access System

- **Theme-** Advancing Fisheries Research through Systematic Data Integration for Enhanced Ecological Insights

- **PS Category-** *Software*

- **Team ID-** 7811

- **Team Name -** *Jargon*

BlueFish : Streamlining Geo-Referenced Catch Data

SMART INDIA HACKATHON 2024

Proposed Solution

A platform designed to aggregate, store, and visualize geo-referenced fish catch data efficiently.

Key Features and Functionality

❖ **Data Input and Organization**
  ➢ Supports seamless uploads of Excel/CSV files, with data organized by species, date, location, and depth for improved accessibility.

❖ **Data Fragmentation Solutions**
  ➢ Addresses data fragmentation issues for species-specific habitat models, ensuring cohesive datasets.

❖ **Reporting and Data Sharing**
  ➢ Provides downloadable reports with customizable filters for species, location, and depth, facilitating insights.

❖ **Modular Design**
  ➢ Features dedicated modules for tracking species occurrence and abundance, allowing tailored data management.

❖ **Visualization**
  ➢ Includes interactive maps and graphical analysis of time-series data to easily identify trends.

❖ **AI Integration**
  ➢ AI-driven species abundance prediction models to enhance data-driven decision-making.

How It Addresses the Problem

❑ **Holistic Habitat Models**
  • Addresses data fragmentation to support comprehensive species-specific habitat models.

❑ **Enhanced Decision-Making**
  • Real-time data integration and visualization tools enable timely, informed decisions.

❑ **Customizable Solutions**
  • Modular design allows users to select features that suit their needs, ensuring flexibility.

❑ **Collaborative Insights**
  • Facilitates collaboration among researchers through effective reporting and sharing.

❑ **Efficiency in Data Management**
  • Streamlines data input and organization, reducing entry time and improving accuracy.

Innovation and uniqueness of the solution

✓ 3D Model integration of deep visualization in research.

✓ Seamless Real-Time Fish Abundance with Advanced Prediction Models.
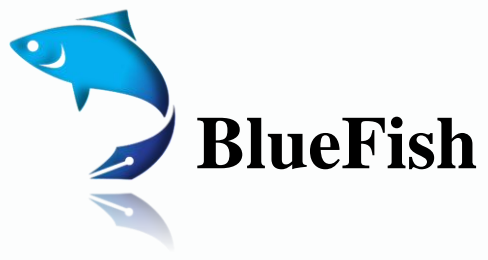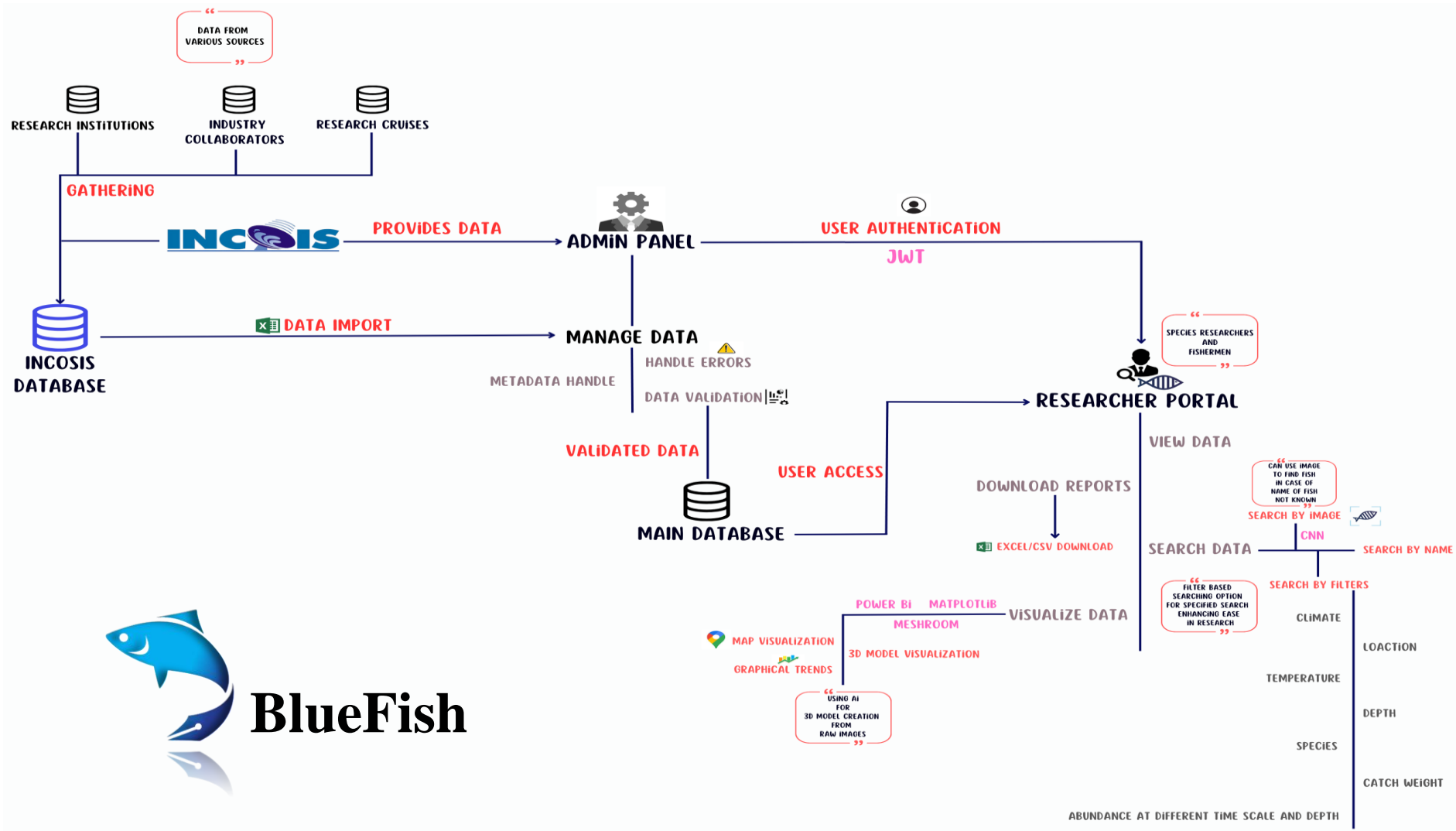
FEASIBILITY AND VIABILITY

Feasibility

➢ **Technical Feasibility**
Easily implemented with proven data handling technologies.

➢ **Data Ingestion & Consistency**
Automated validation ensures smooth data integration.

➢ **Operational Feasibility**
Regular updates and training maintain efficiency.

➢ **Security & Access Control**
Secure login and access features ensure reliability and scalability.

Viability

➢ **Long-term Usability**
Simplifies data access, accelerating research.

➢ **Data Sustainability**
Regular updates maintain data relevance.

➢ **Research Impact**
Centralized data boosts species-specific forecasting.

➢ **Scalability**
Easily adapts to future data growth and features.

Potential Challenges and Risks

➢ Gathering 3D models.

➢ Data lag.

➢ Inconsistent data formats.

Solutions to overcome challenges

➢ Using gen-AI to generate 3D models.

➢ Real-Time Data Integration and automated data updates periodically.

➢ Using a standardized template.

IMPACT AND BENEFITS

Impact

- **Streamlined Research:**
  Centralizes data access, saving time and enhancing analytical focus.

- **Enhanced Forecasting**:
  Supports precise, species-specific fisheries predictions for sustainability.

- **Boosted Collaboration**:
  Unifies researchers, breaking down data silos and fostering teamwork.

- **Insightful Analytics**:
  Leverages advanced tools for impactful insights into habitat suitability.

Benefits

- **Resource Efficiency**:
  Optimizes fishing efforts, minimizing fuel use and maximizing productivity

- **Accessible Innovation**:
  User-friendly portal accelerates research for newcomers and experts alike.

- **Cost Savings**:
  Cuts down on redundant data collection, reducing operational expenses.

- **Data Excellence**:
  Ensures high-quality, reliable data through continuous updates.

RESEARCH AND REFERENCES

• Research

- Research Paper presenting an integrated dataset of fish biodiversity sampled with scientific bottom-trawl surveys
- Research_paper_Link

- Article Combining scientific survey and commercial catch data to map fish distribution
- Article_Link

- An integrated database of fish biodiversity sampled with scientific bottom-trawl surveys
- Link

• Documentations

Documentation   Documentations