# Video Workshop Proposal

- *Establishing Community Standards for Underwater Video Acquisition, Tagging, Archiving and Access*
  - PIs: Ferrini (LDEO), Coleman (URI), Soule (WHOI)
- Concept presented at 2014 Fall DeSSC Meeting
- Community Support
  - WHOI/NDSF, UW, UNOLS, Harvard, Ocean Exploration Trust, NOAA OER, MBARI, Schmidt Ocean Institute
- Proposal Funded Summer 2015
- Workshop to be held March 2016 at URI

# Video Workshop – Steering Committee

- PIs (Ferrini, Coleman, Soule)
- Brian Schlining
  - Monterey Bay Aquarium Research Institute (MBARI)
  - Software Engineer, creator of MBARI VARS system for video annotation data management
- Webb Pinner
  - The Global Foundation for Ocean Exploration (GFOE)
  - Oceanographic Data Management System Architect

# Video Workshop Participants

- ~25-35 in-person participants
  - Operators
  - Science Users
  - TV/Video Professionals
  - Data Managers/Metadata Specialists
- Remote participation
  - *Lots* of interest already!!

# Video Workshop - GOALS

- Understand current state of video logging & data management across community
  - pre-workshop surveys + presentations
- Summarize technical and science-based needs, challenges, existing & desired solutions
- Community Consensus
  - Formats, logging standards, metadata standards, storage/archiving
  - How to best move forward
- Report to be made available on UNOLS website

# Video Workshop Planning

- Target Timeframe: March 21-23, 2016
- Develop list of potential participants
  - Input from DeSSC
  - Invitations out by mid-October
  - Develop Survey(s) in advance of DESCEND2/AGU
- Input from DESCEND2 (Dec. 2015)
- Input from SOI Video Data Management Focus Group (Aug. 2015)

# Video Data Management Focus Group

*Schmidt Ocean Institute 2015 Planning Workshop*

- 2 hour discussion
- August 2015
- 11 International Participants

  Vicki Ferrini (LDEO) – *convener*, Ariell Friedman (ACFR), Rayna Jenkins (ONC), Aaron Marburg* (UW-APL), Phil McGillivary (US Coast Guard), Allison Miller (SOI), Logan Mock-Bunting (SOI), Webb Pinner (Capable Solutions Inc.), Brian Schlining* (MBARI), Andy Stewart* (UW-APL), Carlie Wiener (SOI),

**remote participant*

SCHMIDT OCEAN INSTITUTE

# SOI Focus Group: Topics Discussed

- Current Practices
  - Formats, Redundancy, Data Volumes, File Sizes, Frame-Grabs
  - Metadata: Time code, Closed Captioning, Overlays
- Use-cases (incl. machine learning)
- Interfaces
  - VARS, Squidle, SeaTube, OceanVideoLab
- Synergies

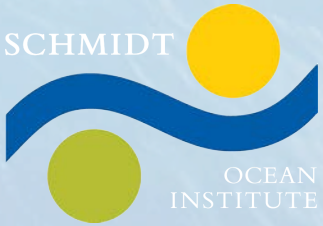
SCHMIDT OCEAN INSTITUTE

# SOI Focus Group: Outcomes

- Several experts already working on different aspects of this problem = lots of space for collaborating
  - Code Sharing
  - API standards
  - Data Awareness
- Low-hanging fruit: existing systems can develop common APIs for sharing information
  - 1st: Where has video been acquired?
  - Later: Where have like observations been made?
- Important perspectives to inform 2016 workshop
  - Pre-workshop surveys
- There's lots more to talk about!

SCHMIDT OCEAN INSTITUTE

# OceanVideoLab


oceanvideolab.org

# SOI-MGDS Video Annotation

## *Pilot Project*

- Create a searchable online database of underwater video observations
  - Science
    - exploration, ground truth, machine learning, big data
  - Outreach
    - public engagement, quick access to highlight content for outreach efforts
- Enable broad discoverability
  - YouTube (~1 billion users/month)
  - API for accessing tagged information and integrating with other ocean image tagging efforts
  - Link to related data resources that complement imagery where possible (e.g. MGDS)

SCHMIDT OCEAN INSTITUTE

# Technology for Pilot Project

- YouTube
  - Broad Usage vs. Vimeo
    - YouTube ~1 Billion Users/Month
    - Vimeo ~ 100 Million Users/Month
  - Provides API for interacting with content
  - Excellent Performance
    - Bandwidth limitations handled by YouTube
  - SOI live streams to YouTube
- PostgreSQL Relational Database
- PostGIS
- Leaflet Map Interface (GMRT basemap)

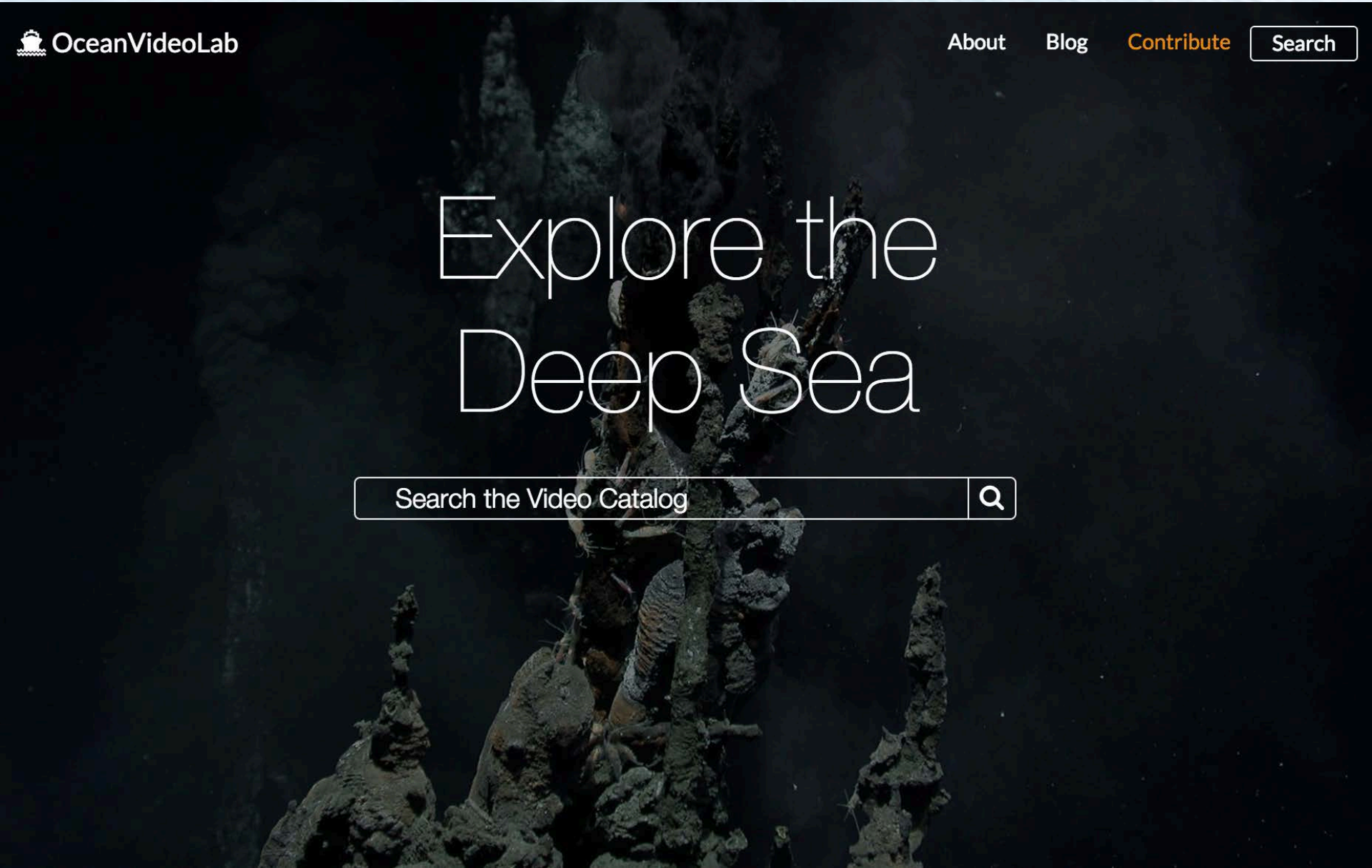
SCHMIDT OCEAN INSTITUTE

# OVL – Design

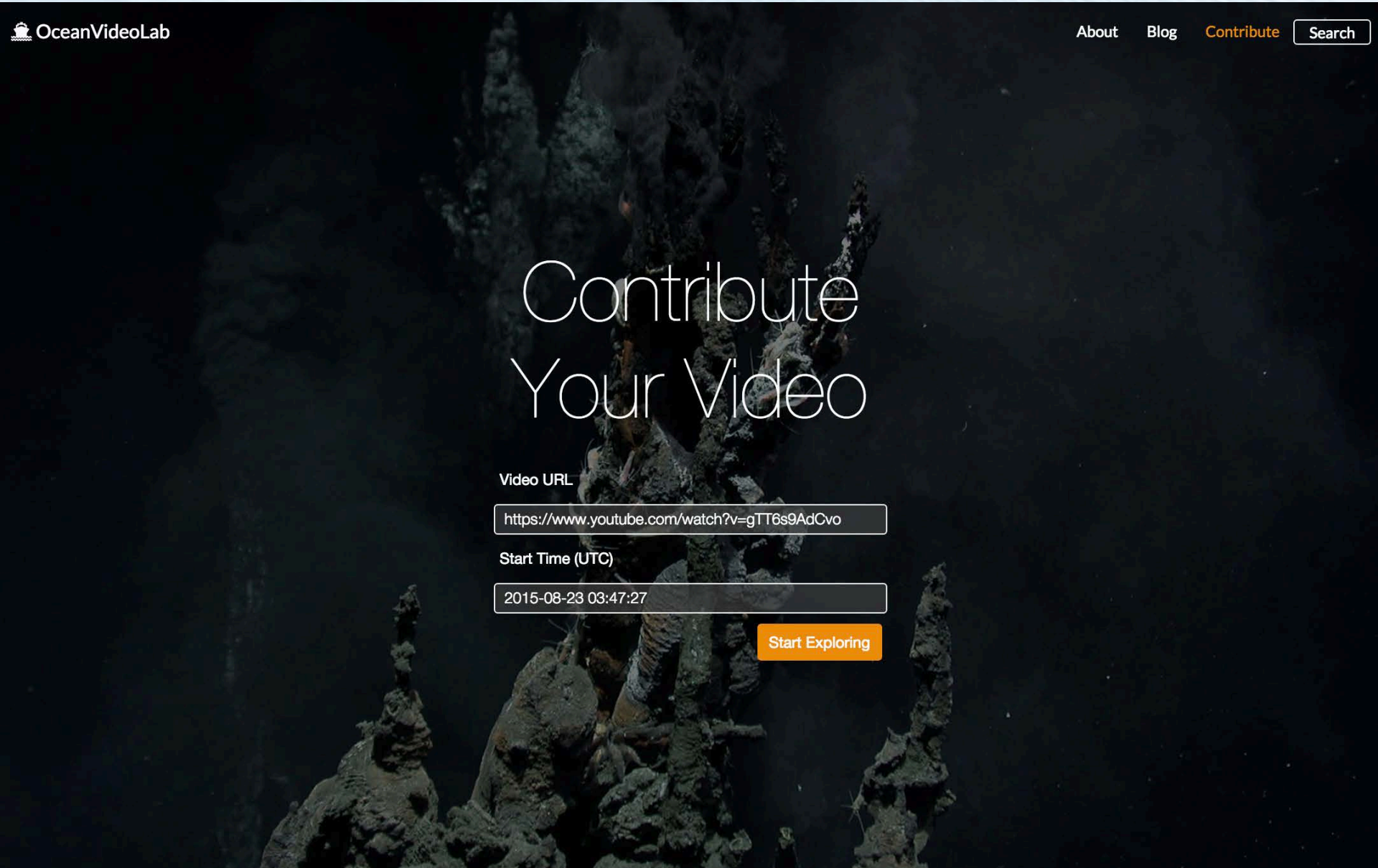
- Registration page for inputting URL to YouTube video
- Accommodate *any* underwater video
  - temporally continuous
  - Online
  - openly accessible
- YouTube Player
- Simple annotation interface
- Integration with map interface and current vehicle position

SCHMIDT OCEAN INSTITUTE

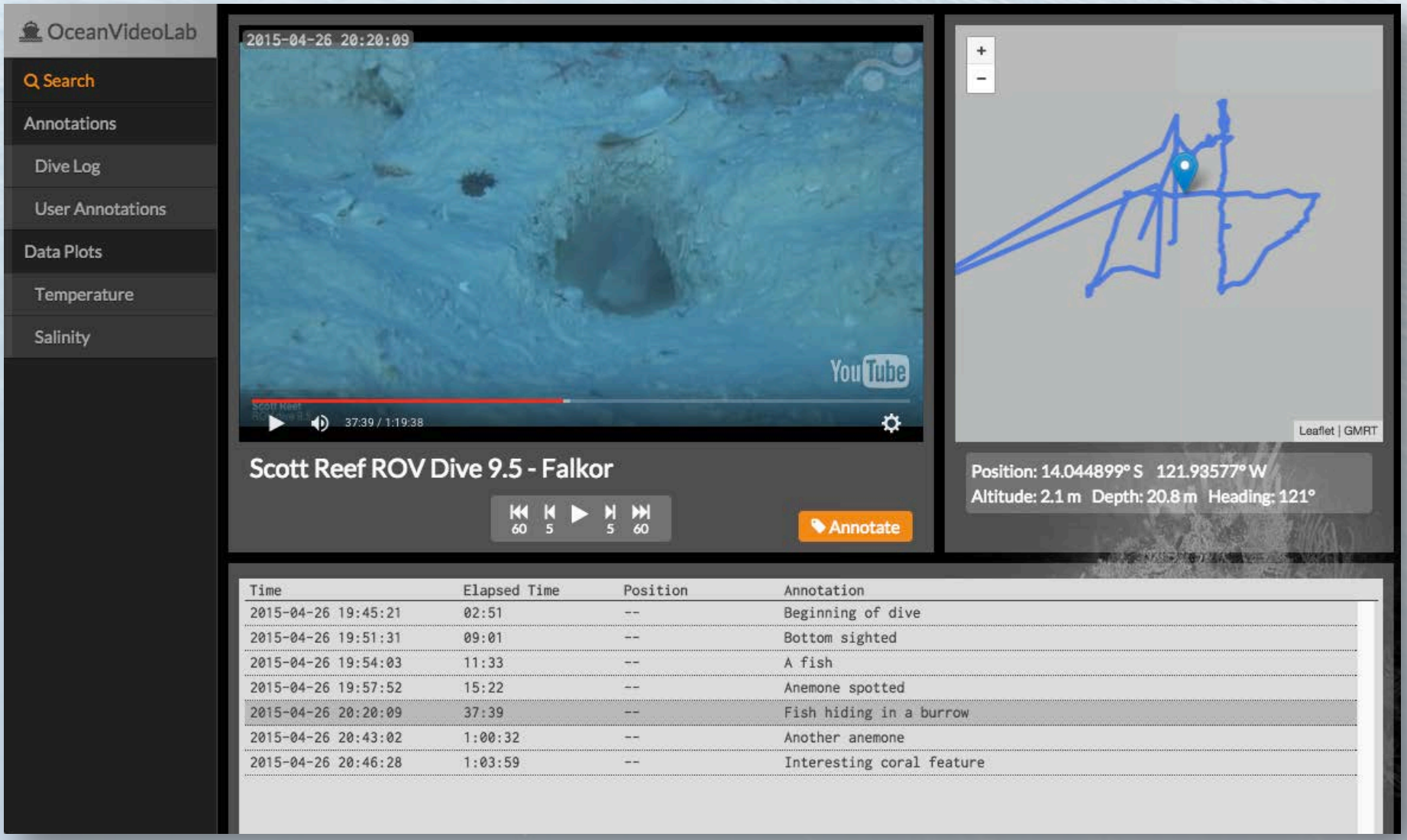
# OVL - Contribute



# OVL - Contribute

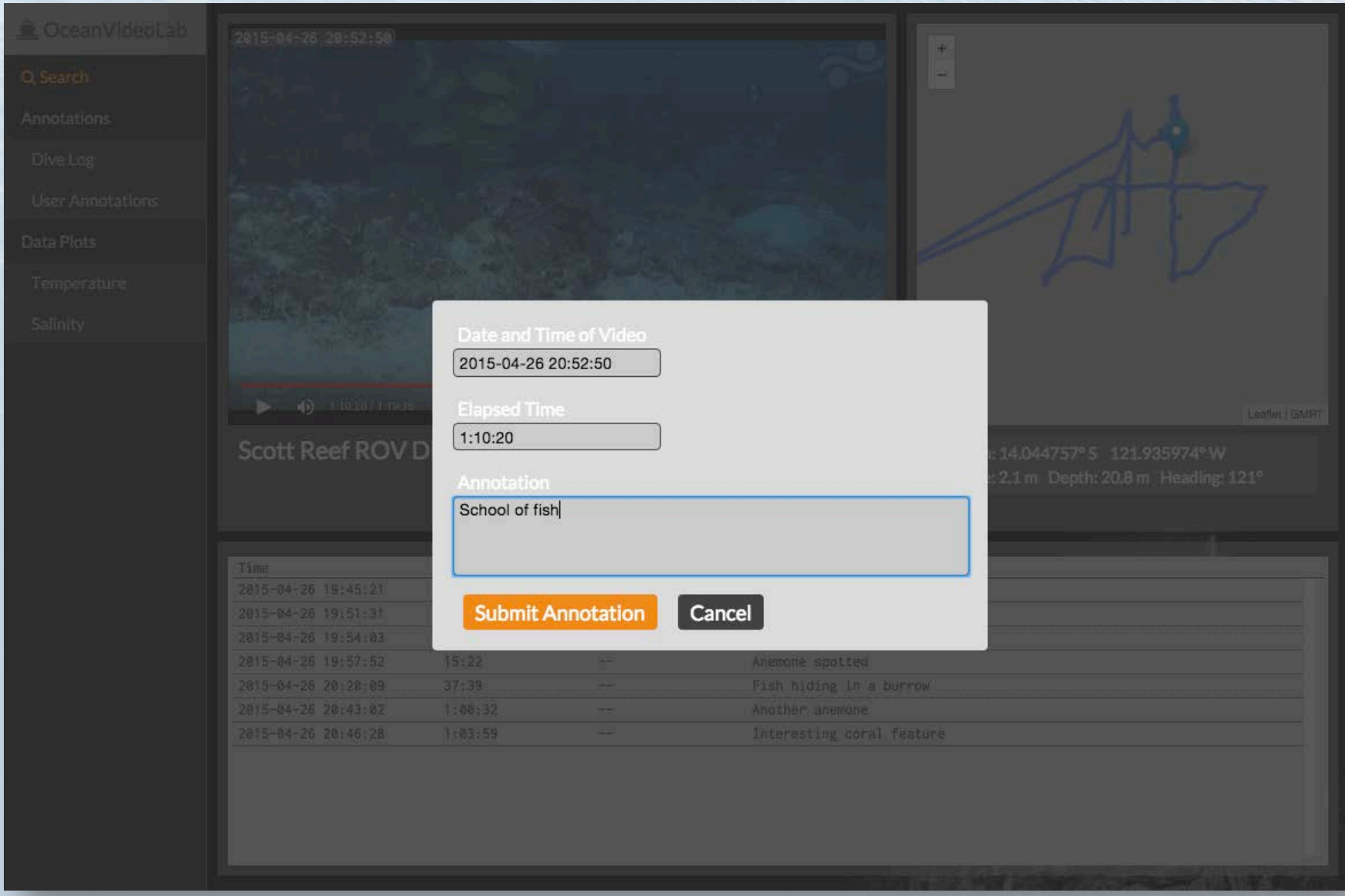


# OVL – Player

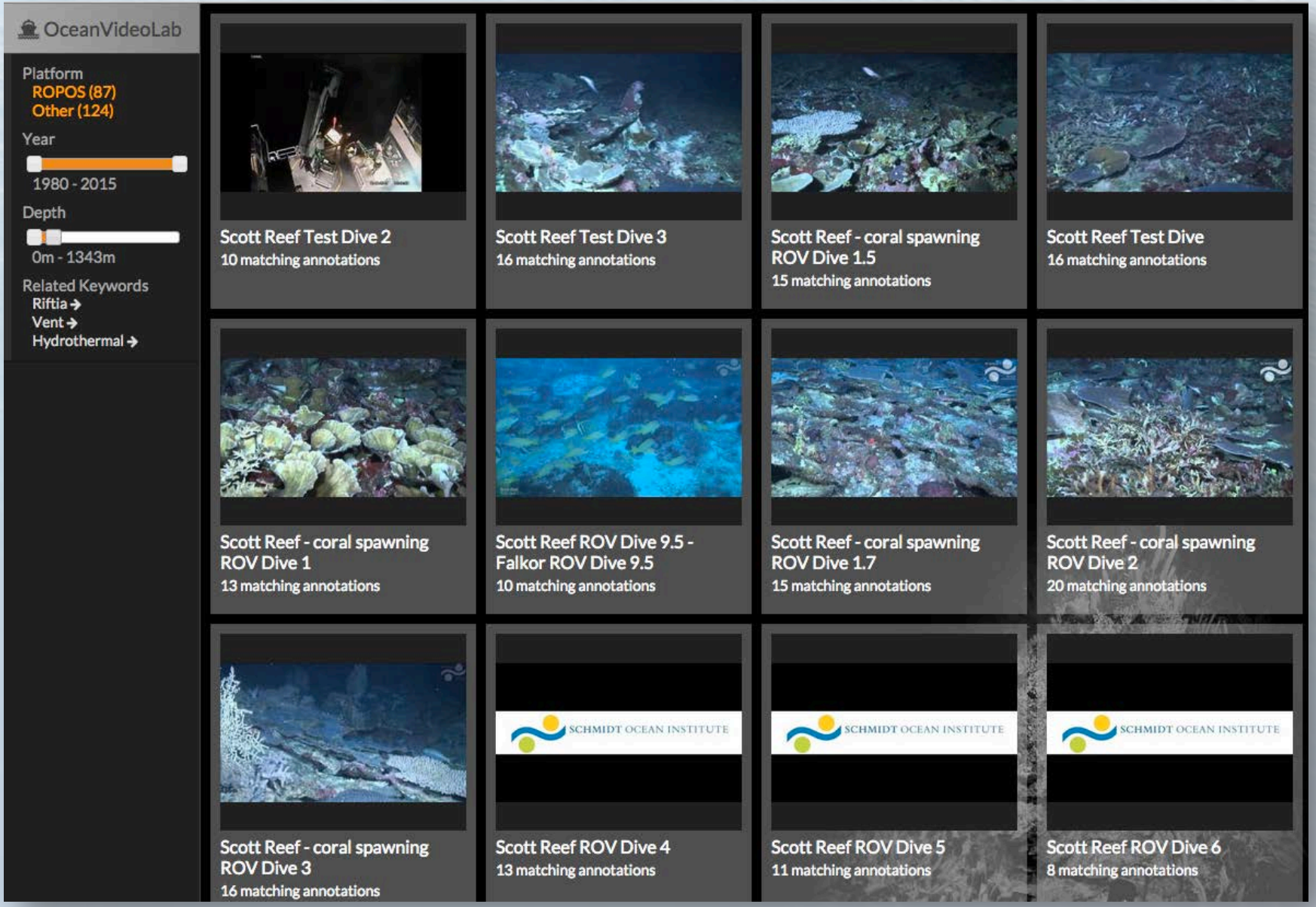



Linked behavior between annotation, map, video panels

# OVL – Annotation



# OVL - Search


OceanVideoLab
Platform
ROPOS (87)
Other (124)
Year
1980 - 2015
Depth
0m - 1343m
Related Keywords
Riftia →
Vent →
Hydrothermal →
Scott Reef Test Dive 2
10 matching annotations
Scott Reef Test Dive 3
16 matching annotations
Scott Reef - coral spawning ROV Dive 1.5
15 matching annotations
Scott Reef Test Dive
16 matching annotations
Scott Reef - coral spawning ROV Dive 1
13 matching annotations
Scott Reef ROV Dive 9.5 - Falkor ROV Dive 9.5
10 matching annotations
Scott Reef - coral spawning ROV Dive 1.7
15 matching annotations
Scott Reef - coral spawning ROV Dive 2
20 matching annotations
Scott Reef - coral spawning ROV Dive 3
16 matching annotations
Scott Reef ROV Dive 4
13 matching annotations
Scott Reef ROV Dive 5
11 matching annotations
Scott Reef ROV Dive 6
8 matching annotations

# OVL – Strategy & Next Steps

- Short-Term Sept 2015
  - Deploy POC/MVP
  - Develop UI/UX  for Contribute, View, Tag, Search
  - Authentication for tagging
  - Presentation at 2016 Ocean Sciences Meeting
- Long-Term
  - Enhance access to related data (plots, map overlays?)
  - Deploy API to enable queries from external systems
  - Expand to Vimeo and/or other players
  - FrameGrabs & detailed tagging within frame
  - Pursue Collaborations
    - Code-share with complementary efforts (e.g. Squidle)
    - Machine Learning & Big Data

# Questions?