



Proposal for Trade Study for WiSSL 2.0

Preliminary Design 2022



3D at Depth Proposal Reference Number: 873

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Project Name or Client Reference Number: MBA-WiSSL2PreliminaryDesign2022

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Client Address: 7700 Sandholdt Road | Moss Landing, CA 95039



COMPANY OVERVIEW

3D Subsea LiDAR. Control the Beam... Control the Data... Control the Return™

3D at Depth Inc. (3DD) is the world's leading expert in subsea LiDAR laser technology. Our advanced subsea LiDAR laser (SL) systems and survey support services help customers transform the value of underwater 3D data. From data collection and processing, through visualization and analysis, 3DD delivers precise, repeatable, millimetric 3D point clouds to measure, map, and evaluate underwater assets, resources and environments.

Our portfolio of subsea LiDAR laser (SL) systems are powered by in-house patented algorithm software. Each survey application leverages the unique features of subsea LiDAR technology including total beam control with longer ranges up to 45 meters during the data collection process. Our subsea LiDAR solutions place photons where you want them, when you want them. 3D at Depth's multi-tiered data management, processing, and analytic service allows clients to extract greater value from their 3D data.

This comprehensive range of client deliverables is designed to enhance workflow efficiencies, support engineering analysis, and provide insight into long-term asset integrity. The result is robust, measurable 3D data sets with reflectivity, which easily integrate into existing GIS systems or CAD based platforms. One tool, multiple applications, delivered in a single cohesive data format for total asset awareness. 3D at Depth's subsea LiDAR VR Platform "Powered by IQ3" is an immersive collaboration tool connecting multiple users and key decision makers via any laptop, desktop or smart device through a secure web portal. Measure in 3D and manage in 4D, for greater insight and more effective decisions across the survey value chain.

Founded in 2009, the Company is focused on innovation and best practices for 3D data collection, visualization and analysis. 3D at Depth's office locations in the US, UK and Australia support client survey operations around the world. The Company, Employees and Board of Directors (BOD) are committed to conduct business in accordance with the highest standards of health, safety, security and environment policies and laws. 3D at Depth's core values are built around integrity, honesty and exceeding customer expectations.

3D at Depth's optical, laser, LiDAR, and in-water measurement systems are protected at least by:

- US Patent 8,184,276
- US Patent 8,467,044
- US Patent 10,545,233
- US Patent 10,698,112
- US Patent 10,502,829
- US Patent 10,871,567
- US Patent 11,125,875





1. INTRODUCTION

3D at Depth Inc. is pleased to submit this proposal, in response to a request for quotation from MBARI for the preliminary design of a WiSSL capable for AUV deployment (WiSSL 2.0).

3D at Depth and MBARI have agreed that the best approach is a phased program where both parties are only committed to the current phase – the same approach used in the development of the current WiSSL. At the end of each phase the performance, schedule, and costs are jointly reviewed and both parties can decide to continue to the next stage or not without penalty.

The phased approach would include the following project phases:

1. Feasibility / Preliminary design phase
2. Detailed design phase, ending with critical design review at MBARI
3. Build and factory test phase, ending with factory acceptance test at 3D at Depth
4. Validation tests in MBARI tank and sea trials

The scope, schedule, and cost of each phase is dependent upon the outcome of the prior phases. Therefore, this quotation, if accepted, shall be binding solely with respect to the first phase. Actual services and costs for future phases shall be agreed upon by the parties prior to commencement of each phase. The Terms and Conditions attached to this quotation shall apply to all phases.

2. SCOPE OF WORK (SOW)

Phase 1 – Investigation and Preliminary Design

The goal of the first phase is to define a system that meets MBARI's performance and cost goals while maintaining as much of 3D at Depth's current product design as possible to minimize risk to the final delivered product. Multiple architectures will be investigated initially. The parties will participate in at least monthly calls to review progress and to receive inputs and direction from the MBARI team based upon findings of the investigations and trade studies.

The primary goal of the design is to reduce the Size, Weight, and Power (SWaP) usage of the system to better enable deployment on an AUV. Potential performance enhancements include:

- a) faster data collection rates - laser Pulse Repetition Frequency (PRF) - which allows for faster vehicle speeds
- b) wider scan angles
- c) the ability to measure water temperature from the same laser pulse.

Note that proposed testing is being performed on SL4 electronics that have been purchased and developed internally by 3D at Depth at no charge to MBARI.



Specific tasks and items to be investigated include:

Task 1

Take advantage of 3D at Depth internal development efforts on SL4 electronics to reduce SWaP, mainly of the electronics canister. Options to investigate include:

- 1) Replacement of the current WiSSL electronics with the SL4 electronics which will drastically reduce the SWaP of the current electronics housing.
- 2) Include the SL4 electronics within each optical head. This will increase the length of the optical heads but will eliminate the electronics bottle and the RF cables.
- 3) Determine customizations of the electronics required for the MBARI system based upon one of the options above.

Moving to the SL4 electronics architecture will move the MBARI system in-line with standard 3D at Depth products which allows MBARI to take advantage of the continual upgrades to the standard products.

This task also includes:

- 1) Outlining the SW requirements for autonomous operation
- 2) Outlining communications methods and whether to supply a combined dataset or a dataset per head
- 3) General project planning, management, documentation, and design review support tasks.

Task 2

Investigate integration of a higher PRF laser to enable faster data collection than the current 40,000 pulses per second laser. This includes investigation and selection of a laser, performance modeling, data rate tests on SL4 electronics, optical design, mechanical mounting concepts including thermal impacts, electrical power requirements, and electrical interfaces.

Task 3

Investigate adding the ability to measure water temperature to one or both optical heads. This starts with performance modeling trade studies that will be reviewed with MBARI to ensure use-case scenarios are met. Key components are then investigated to meet the performance requirements along with preliminary optical and opto-mechanical feasibility. Test data processing requirements with SL4 electronics.

Task 4

Investigate replacing the galvanometer single-axis scanner with a spinning mirror scanner. This includes performance modeling to determine how much the returns and accuracy degrade at the highest angles. The gain is the SWaP improvement by obtaining the full 90° swath with a single optical head. Includes estimates of data rates / scan speeds which includes points per line for varying AUV speeds, component selection, optical layout and opto-mechanical feasibility design, and impacts on housing and window size.



3. PROJECT SCHEDULE

It is anticipated that this first phase will commence the first week of January 2022 and will last less than 6 months. The majority of the project should be completed by the end of May 2022 to enable a proposal for the next phase to be generated in June 2022. 3D at Depth does not guarantee this schedule but will use its best efforts to achieve it, subject to unforeseen circumstances and the cooperation of MBARI.

4. DELIVERABLES

The deliverables for the first phase are as follows:

- 1) Monthly design reviews by phone with the MBARI team to provide updates to the design trades and to gather feedback and direction from the MBARI team.
- 2) Final power point presentation of the agreed upon preliminary design including expected performance. Design review to be held at MBARI.
- 3) Price and schedule quote for the next phase of the design

5. PRICING

3D at Depth Fixed Price Cost Summary – Phase 1		
Item	Description	Project Budget Amount (\$USD)
1	Task 1: SL4 electronics to reduce SWaP	\$45,500
2	Task 2: Higher PRF laser	\$16,800
3	Task 3: Temperature measurements feasibility	\$31,500
4	Task 4: Wider scan angle	\$33,600
5	Travel and expenses for 2 people for preliminary design review at MBARI (estimated – charged at actual + 15%)	\$2,500
Phase 1 Total Cost		\$129,900

Final price may vary based upon any changes in travel costs.

3D at Depth will invoice 50% of the project upon receipt of PO, and 50% upon delivery of final Power Point and design review.



6. MBARI TERMS AND CONDITIONS

For the purposes of these Terms and Conditions, the term “**Contract**” shall mean the agreement between 3D AT DEPTH, INC (“**3D at Depth**”) and MBARI (“**Buyer**”) arising as a result of Buyer’s acceptance, whether by purchase order or otherwise, of a sales quotation or proposal for 3D at Depth’s products or services. Such Contract shall be deemed to incorporate and be governed by these Terms and Conditions. **THESE TERMS AND CONDITIONS SHALL TAKE PRECEDENCE OVER ANY TERMS AND CONDITIONS WHICH APPEAR IN BUYER’S PURCHASE ORDER OR IN ANY DOCUMENTS AND COMMUNICATIONS INCORPORATED BY REFERENCE IN BUYER’S PURCHASE ORDER.** No term or condition of Buyer’s purchase order additional to or different from these Terms and Conditions shall become part of the Contract unless explicitly agreed to in writing by 3D at Depth.

1. **Sales Quotations:** Prices, specifications and dates for delivery of products or performance of services referenced in 3D at Depth’s sales quotations are estimates only and shall not be binding on 3D at Depth until all technical requirements have been agreed and 3D at Depth has accepted Buyer’s purchase order referencing such quotation. Sales quotations terminate if not accepted by Buyer in writing within 30 days or by the date specified in the sales quotation. The term “sales quotation” as used herein shall include any quote, proposal, or other document proposing services or deliverables to be provided to Buyer by 3D at Depth.

2. **Purchase Orders:** By submitting a purchase order to 3D at Depth, Buyer agrees to be subject to these Terms and Conditions in their entirety. No purchase order, whether or not submitted in response to a sales quotation by 3D at Depth, shall be binding upon 3D at Depth until accepted in writing by 3D at Depth by an order acknowledgement.

3. **Prices and Taxes:** Prices do not include federal, state or local taxes, including without limitation sales, use, value-added or excise taxes now or hereafter enacted, applicable to the products or services sold or provided to Buyer, which taxes may be added to the sales price or billed separately and which taxes shall be paid by Buyer unless Buyer provides any necessary tax exemption certificate.

4. **Shipment and Delivery:** Unless otherwise agreed to in writing, delivery of all products sold or leased to Buyer hereunder is F.O.B. 3D at Depth’s loading dock for domestic shipments and EXW 3D at Depth’s facility (Ex-Works) (as defined in Incoterms, 2010). In the absence of specific instructions from Buyer, 3D at Depth will select the carrier and ship at Buyer’s expense, but shall not be deemed thereby to assume any liability in connection with the shipment nor shall the carrier be construed to be the agent of 3D at Depth. Buyer must provide its own insurance. Title and risk of loss or damage to all products sold hereunder shall pass from 3D at Depth to Buyer upon delivery by 3D at Depth to the possession of the carrier. Any claims for loss, damage or mis-delivery thereafter shall be filed with the carrier.



5. **Terms of Payment:** Terms of payment shall be net thirty (30) days from date of invoice. If Buyer fails to pay any payment due hereunder when due, 3D at Depth may recover, in addition to the payment, interest thereon at the rate of 1 1/2% per month.

6. **Compliance with Laws.** The Parties shall comply with, and pay all costs associated with, all applicable laws, regulations, treaties, community laws, directives and administrative orders that relate to or govern the import, export, use, reuse, collection, and treatment of the products provided by 3D at Depth and their components. Buyer represents and warrants the following: (a) that neither it nor the customers to which it provides services and/or products is on the United States Department of Treasury, Office of Foreign Asset Controls list of Specially Designated National and Blocked Persons and is not otherwise a person to whom providing goods or services is legally prohibited; (b) Buyer will not use the described products or services for the development, design, manufacture, production, stockpiling, or use of nuclear, chemical or biological weapons, weapons of mass destruction, or missiles; and (c) Buyer will not transport or otherwise provide products or services to any person (including any natural person or government or private entity) located in or is a national of any embargoed country or one that is restricted under U.S. export regulations. Regardless of any disclosure made by Buyer to 3D at Depth of the ultimate destination of 3D at Depth products, Buyer shall not export either directly or indirectly any 3D at Depth product either in contravention of statute or regulation.

7. **Contingencies:** 3D at Depth shall not be liable for any delay in delivery or for non-delivery, in whole or in part, caused by the occurrence of any contingency beyond the control of 3D at Depth, including, by way of illustration but not limitation, Federal government or military orders with defense-rated priority, war (whether an actual declaration thereof is made or not), sabotage, insurrection, riot or other act of civil disobedience, act of a public enemy, failure or delay in transportation, act of any government or any agency or subdivision thereof, judicial action, labor dispute, accident, epidemic or pandemic, fire, explosion, floods, storm or other act of God, shortage of labor, fuel, raw material or machinery or technical failure where 3D at Depth has exercised ordinary care in the prevention thereof.

8. **Ownership of Intellectual Property:** The products and services being provided under this Contract are primarily based upon 3D at Depth's pre-existing designs and intellectual property, including without limitation 3D at Depth patents. Although Buyer will own the deliverables developed under this Contract, all right, title and interest in and to any and all hardware and software designs or other intellectual property developed by 3D at Depth under this Contract or included in any deliverables will be owned by 3D at Depth. 3D at Depth shall at all times have and retain sole title and full ownership of all worldwide intellectual property rights in all deliverables provided by 3D at Depth and in all materials, content, concepts, data and information utilized in the performance of or embodied in any services provided by 3D at Depth, including without limitation all hardware, software, firmware, and claimed methods contained in all deliverables and all patents and including without limitation any software or documentation supplied by 3D at Depth for use with the deliverables and any know-how, ideas or concepts disclosed to Buyer during any training, data processing or other services (collectively, the "3D at Depth IP"). Buyer agrees not to manufacture, reproduce, modify, disassemble, or reverse engineer any deliverables or 3D at Depth IP, or to otherwise in any manner attempt to replicate the functionality of the deliverables



or 3D at Depth IP. Nothing in this Contract will be deemed to grant, by implication, estoppel, or otherwise, any interest in or license to any 3D at Depth IP except as set forth in Section 9 below.

9. **License:** Upon providing any deliverables to Buyer, 3D at Depth grants to Buyer a limited, non-transferable, nonexclusive, perpetual, royalty-free, worldwide, irrevocable license to use any 3D at Depth IP that is imbedded in such deliverables solely to the extent necessary for the use and operation of the deliverables by Buyer or by Buyer's personnel.

10. **Warranty.** All 3D at Depth products and services are provided on a best-efforts basis. EXCEPT AS EXPRESSLY SET FORTH IN SECTION 11 OR 12 BELOW, ANY WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND/OR NONINFRINGEMENT OF THIRD-PARTY RIGHTS ARE HEREBY DISCLAIMED.

11. **Limited Liability and Remedies:** 3D AT DEPTH'S SOLE AND EXCLUSIVE LIABILITY, AND BUYER'S SOLE AND EXCLUSIVE REMEDY, FOR ANY NONCONFORMITY OR DEFECT IN THE DELIVERABLES OR SERVICES PERFORMED BY 3D AT DEPTH OR ANYTHING DONE IN CONNECTION WITH THIS CONTRACT, IN TORT (INCLUDING NEGLIGENCE), CONTRACT, OR OTHERWISE, SHALL BE TO REPAIR OR REPLACE DEFECTIVE PRODUCTS WITHIN A COMMERCIALLY REASONABLE TIME AFTER RECEIVING NOTICE AND RETURN OF SUCH DEFECTIVE PRODUCTS.

12. **Patent Indemnification:** 3D at Depth shall defend any suit or proceeding brought against Buyer to the extent that it is based on a claim that the construction or design any products or deliverables manufactured by 3D at Depth and purchased by Buyer infringe a United States patent, and shall indemnify Buyer against all costs, damages and expenses finally awarded against Buyer and payment of any settlement amount provided that Buyer notifies 3D at Depth promptly in writing of any such claim and gives 3D at Depth full and complete authority, information and assistance for the defense of such claim, including without limitation authority to approve or reject any settlement. Notwithstanding the foregoing, Buyer hereby represents and warrants that any information, specifications, or requests that Buyer provides to 3D at Depth in connection with this proposal shall not infringe the rights of any third parties, and 3D at Depth's indemnification obligations hereunder shall not include indemnification for any claims to the extent arising from such information, specifications, or requests provided by Buyer to 3D at Depth. THE FOREGOING STATES THE ENTIRE LIABILITY OF 3D AT DEPTH, AND THE EXCLUSIVE REMEDY OF BUYER, WITH RESPECT TO ANY ALLEGED PATENT INFRINGEMENT BY ANY PRODUCTS OR DELIVERABLES.

13. **Limitation of Damages.** IN NO EVENT, REGARDLESS OF THE FORM OF ACTION, SHALL 3D AT DEPTH BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL LOSSES OR DAMAGES ARISING OUT OF OR RELATED TO THE SALE OR USE OF ITS DELIVERABLES OR SERVICES OR ARISING OUT OF ANYTHING DONE IN CONNECTION WITH THIS CONTRACT. NO CLAIM OR CLAIMS OF ANY KIND, WHETHER BASED UPON CONTRACT, WARRANTY, TORT (INCLUDING, BUT NOT LIMITED



TO, NEGLIGENCE, WARRANTY AND STRICT LIABILITY), STATUTORY OR REGULATORY PROVISIONS, INDEMNITY, CONTRIBUTION, OR OTHERWISE, SHALL BE GREATER IN AMOUNT IN AGGREGATE THAN THE PURCHASE PRICE PAID BY BUYER FOR THE DELIVERABLES OR SERVICES IN RESPECT OF WHICH DAMAGES ARE CLAIMED.

14. Insurance and Buyer Indemnity. Buyer will obtain and maintain insurance coverage from a reputable insurance provider covering any leased products at a minimum replacement cost of \$450,000 USD. Buyer shall indemnify and hold harmless 3D at Depth, its officers, directors, shareholders, employees, subsidiaries, parents, affiliates and insurers from and against any and all liabilities, damages, losses, claims, lawsuits, including costs and expenses in connection therewith, for death or injury to any persons or loss of or damage to any property whatsoever, caused in any manner by materials, specifications, or information provided by Buyer to 3D at Depth or by Buyer's possession, use or operation of any services or deliverables provided by 3D at Depth, excluding only claims for which 3D at Depth is obligated to indemnify Buyer pursuant to Section 12 above.

15. Cancellation of the Contract:

3D at Depth and Buyer have agreed that the best approach to this Contract is a phased approach where both parties are only committed to the current phase as set forth in the sales quotation. At the end of each phase, the performance, schedule, and costs shall be jointly reviewed and both parties can decide to continue to the next phase or not without penalty. Either party can terminate at any time provided that 3D at Depth is compensated for all work and expenses accrued through the date of termination including advanced expenses.

16. Restrictions on Use and Resale

3D at Depth does not customarily sell its subsea LIDAR products and is regularly in the business of leasing such products. In order to prevent damage to its core business, 3D at Depth requires assurance that Buyer will not resell, lease or otherwise provide the deliverables developed under this program to any third party or for any use in the oil and gas or nuclear utility markets without 3D at Depth's consent. Accordingly, as a condition of entering into this agreement, Buyer agrees that it will not resell, lease or otherwise provide the deliverables developed under this program to any unrelated third parties or for any use in the oil and gas or nuclear utility markets without 3D at Depth's written consent. In the event that Buyer desires to sell the deliverables, Buyer will offer 3D at Depth to repurchase it at a reasonable fair market value to be determined by mutual agreement at the time of such offer.

17. Non-Waiver; Remedies: No waiver of any breach of these Terms and Conditions shall constitute a waiver of any prior or subsequent breach of any similar or dissimilar provision or a modification of this Contract. All rights and remedies, whether evidenced hereby or by any other contract or document, shall be cumulative and nonexclusive and may be exercised singularly or concurrently. In the event that any provision of the Contract or these Terms and Conditions is held unenforceable by a court of competent jurisdiction, such provision shall be removed and the remainder of the Contract shall remain enforceable as written.



18. Applicable Law and Dispute Resolution: The validity, performance and construction of this Contract shall be governed by the laws of the State of Colorado. Prior to commencement of any legal proceedings, Buyer and 3D at Depth shall meet at a senior level to attempt to resolve differences.

19. Jurisdiction; Venue: Each of the parties consents and submits to the exclusive jurisdiction of the state courts located in Boulder, Colorado and the federal courts located in Denver, Colorado in connection with any suits or other actions arising between the parties to this Contract, and consents and waives any objections to the venue of such action or proceeding in such courts. The prevailing party in any legal action brought by one party against the other will be entitled, in addition to any other rights and remedies it may have, to reimbursement for its expenses, including court costs and reasonable attorney's fees.

20. Confidentiality. In connection with this Contract, each party may be exposed to Confidential Information of the other party. "Confidential Information" shall include information acquired through documents, observations, inspections of facilities, assets or properties or discussions with employees or agents of either party, irrespective of the form of communication, as well as any related reports, technical or other data, analyses, opinions or other proprietary materials, provided that such information is (a) designated as confidential, or (b) is of a nature or character such that the receiving party should reasonably be aware that such information is confidential. The confidentiality obligations herein do not apply to any information that: (i) is or becomes generally available to the public through no fault of the receiving party; (ii) is possessed by the receiving party, as evidenced by the receiving party's written records, before receipt thereof from the disclosing party; (iii) is disclosed to the receiving party in good faith by a third party who has an independent right to such information; (iv) is developed by the receiving party as evidenced by documentation, independently of the confidential information; or (v) is required to be disclosed by the receiving party pursuant to an order of a court of competent jurisdiction or other governmental agency having the power to order such disclosure, provided the receiving party uses its best efforts to provide timely notice to the disclosing party of such order to permit the disclosing party an opportunity to contest such order. Each party will hold in confidence and will not disclose to any other person or entity, except with the written consent of the other party or pursuant to the exceptions stated in this paragraph, any Confidential Information of the other party, and will not use such Confidential Information except as necessary to perform such party's obligations pursuant to this Contract.

21. Assignment: This Contract shall be binding upon and inure to the benefit of the parties and their respective legal representatives, successors and permitted assigns. 3D at Depth may assign this Contract in connection with any sale of substantially all of its assets. This Contract is personal to Buyer, and Buyer may not assign any of its rights or delegate any of its obligations there under, in whole or in part, without the prior written consent of 3D at Depth which may be withheld for any reason.

22. Complete Agreement; Modifications: This Contract constitutes the entire agreement between the parties relating to the sale of the products and performance of services (if any) and



no addition to or modification of any provision of this Contract shall be binding unless agreed in writing by 3D at Depth and Buyer.

23. **Notices:** All notices given under this Contract shall be in writing, mailed by first class mail, certified or registered, or delivered by hand or sent by a nationally recognized overnight courier, to the address of the other party set forth in the sales quotation or to such other address as such party may designate from time to time by such notice, and shall take effect when received.

24. **Non-Exclusivity.** The parties acknowledge and agree that nothing set forth herein shall impair the either party's right to provide products, services or any other services or materials to any third parties on such terms and conditions as such party may determine in its sole discretion.

25. **Relationship of the Parties.** The parties acknowledge and agree that their relationship is that of independent contractors. Nothing set forth herein shall be construed to place the parties in the relationship of partners or joint venturers, and neither party shall have any right or power to obligate or bind the other in any manner whatsoever except as authorized in this Agreement or otherwise specifically authorized in writing.

26. MBARI Reimbursement of Non-Recurring Engineering (NRE) Costs:

MBARI has requested that if the subsea LIDAR system developed under this Contract is sold, leased or otherwise provided by 3D at Depth to other clients for profit, then there is a mechanism for MBARI to recoup a portion of the Non-Recurring Engineering (NRE) costs associated with this Contract, which will primarily be realized in the second phase of the program (Detailed Design Phase). Total recoupable NRE costs will be determined by 3D at Depth at the end of the second phase and a description thereof will be provided to MBARI in writing. It is agreed that NRE reimbursement is not for standard changes (such as housing length changes or connector changes), but for significant changes in technology beyond what 3D at Depth has already implemented or designed. 3D at Depth agrees that if the design of the subsea LIDAR specifically developed for MBARI under this program is used commercially by 3D at Depth and such use generates income for 3D at Depth, then MBARI will be paid 10% of the net income actually paid to 3D at Depth in connection with such use until 100% of the recoupable NRE costs have been reimbursed. Payments pursuant to this provision will be made to MBARI within 30 days of 3D at Depth receiving payment.

Accepted by:

3D at Depth, Inc.

Name: Carl Embry

Title: CEO

Date: January 7th, 2022

Accepted by:

MBARI

Name: _____

Title: _____

Date: _____