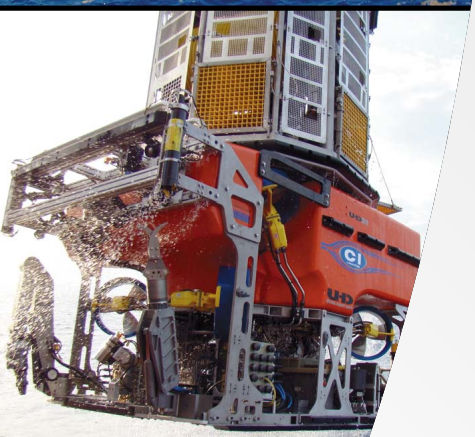
C-Innovation



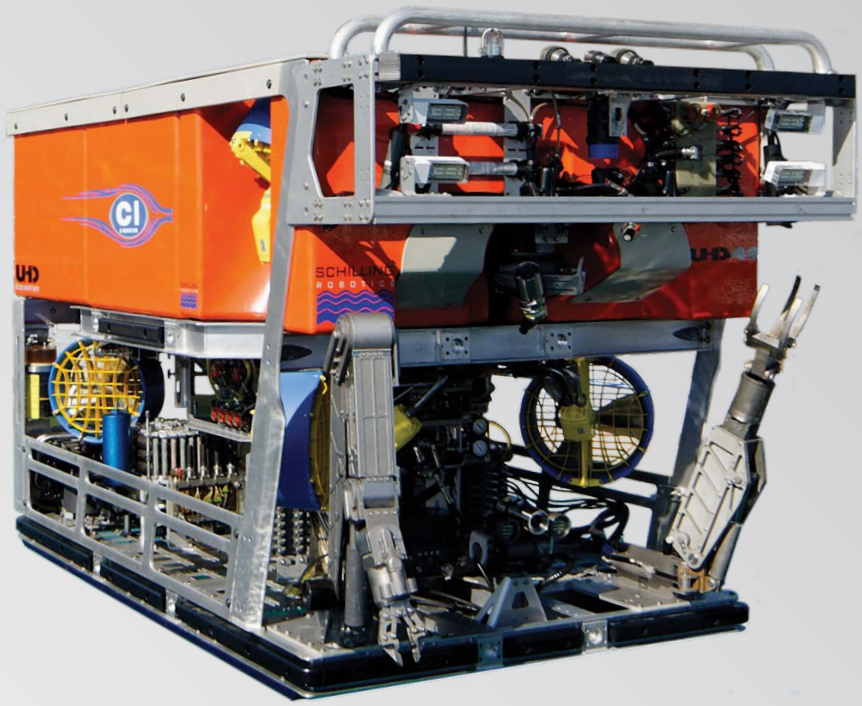
Taking Subsea Operations to New Depths

Superior ROV Solutions from C-Innovation

Significant Challenges… Innovative Solutions

C-Innovation delivers effective surface and subsea operations enhancing vessel efficiency worldwide in a continually changing environment – the vast ocean realm.

Our unique philosophy is focused on achieving successful projects for our clients through innovative ROV solutions, parts redundancy, training and safety, and environmental awareness. C-Innovation is a company committed to solutions and maximizing vessel efficiency worldwide through remote monitoring and diagnostics capabilities.



C-Innovation provides a robust, system-wide platform utilizing the most sophisticated ROVs available, along with superior sensor capacity designed to meet the advanced technologies of today's evolving offshore industry.

The focus on emerging technologies and operational efficiency reflects C-Innovation's mission to provide innovative solutions to the most complex challenges in today's offshore industry.

Safe, efficient subsea remotely operated vehicle operations

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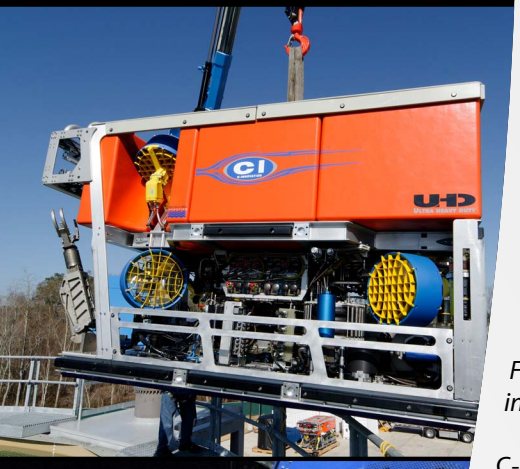
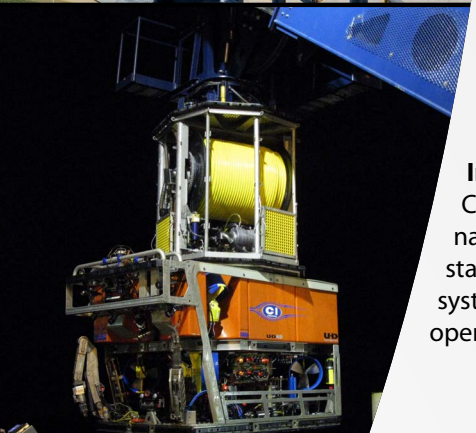




Ultra Heavy Duty ROV (UHD® ROV) by Schilling Robotics
The UHD® ROV is optimized for efficient tooling and sensor interfaces with unlimited data or video channels and is easily customized. The ethernet-based control system eliminates one atmosphere housing and various processing electronics. This state-of-the-art ROV also features an advanced control system that offers many closed loop functions, as well as specialized StationKeep® software to allow operators to maintain an automatic position relative to the sea floor. This control system also has a power management system to deliver power where required to complete ROV operations.

Schilling Robotics Top Hat Tether Management System
The Schilling top hat-style Tether Management System (TMS) provides a standard 850-meter tether, proportionally controlled tether speeds, auto render capability and compatibility with UHD® ROV equipment by sharing standardized assemblies and components of the ROV. (A 1,500-meter tether is also available.)

Launch and Recovery Systems
Created for increased operational efficiency, C-Innovation's heavy-weather launch and recovery and deployment systems are tailored specifically to each vessel to maximize ROV capabilities. Systems feature 3.8 m and 5 m outreach A-frames combined with standard, active heave or passive heave compensation systems.

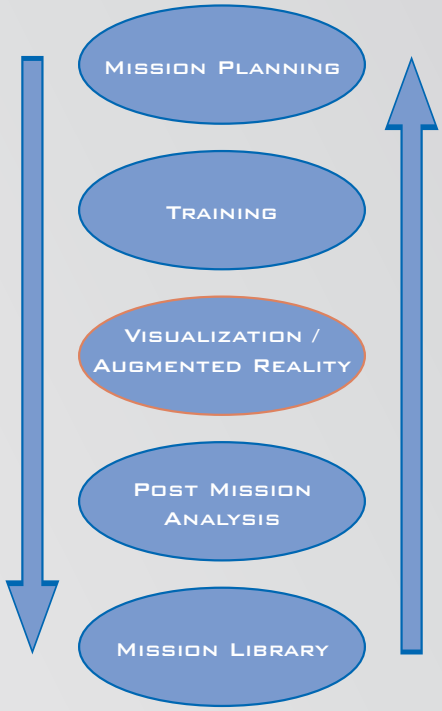
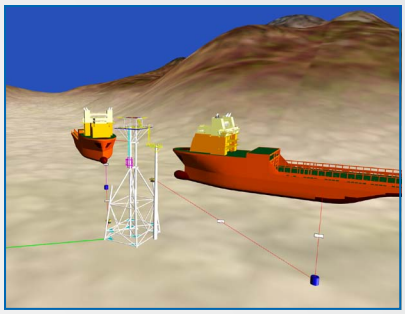


Figure 1

Training Simulation
Training simulations can be built using standard scenarios based on the experiences of C-Innovation's operations leaders, or they can be built to the exact specifications of a particular project.

Mission Planning
In preparation for a multitude of virtual environments, a virtual scene and its players are developed. These can be very useful for pre-mission briefings, mission updates and post-mission assessments.



Augmented Reality System (ARS), *patent pending*
Augmented reality is a real-time situational tool used to monitor ROV operations, and optionally, vessel operations. This system utilizes feedback from multiple sensors to create a series of real time virtual digital images of the ROV's position in relation to its task project and subsea environment. This technology is complementary to our ROV training simulation and can be developed in parallel to mission planning and training applications.

Figure 1 shows the Augmented Reality System integrated into a typical mission flowchart.

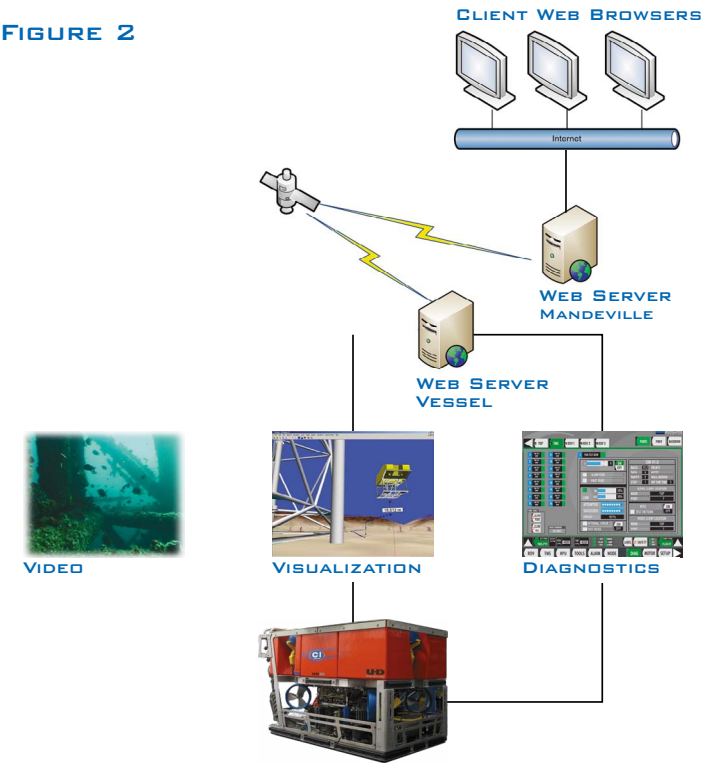
C-Innovation is positioned to incorporate the ARS into critical operations project planning and monitoring, as well as real-time and post-mission analysis.

Inertial Navigation System (INS)
C-Innovation's INS provides accurate real time navigation through the use of the standard sensor package on the ROV. This system is designed for ease of use by the ROV operator via a simple user interface.

Communications

C-Innovation recognizes the need for 24/7 communications with ROV operations to provide real time remote monitoring, diagnostics, logistics support and streaming video. Utilizing satellite technology, each ROV system is in constant communication with a central operations center via the Internet. This feature is available with each ROV system, providing clients with a new level of communications and advanced project awareness. *Figure 2 shows a typical ROV communications system.*

FIGURE 2



UHD® ROV SPECIFICATIONS

System Overall

Depth Rating ..... 4,000 msw (13,124 fsw)
System Classification ..... Ultra Heavy Work Class ROV System
Operating Condition Limits
- Sea State ..... Sea State 6 (vessel dependent)
- Low Temperature ..... -20°C (-4°F)

Certifications
- Containers (Vans) ..... DNV 2.7-1 Offshore Container Certification
- Winch / A-Frame ..... DNV 's Rules for Certification of Lifting Appliances
- Zoning ..... Standard/Zone II (as required)

U/W Electrical Design Standard ..... AODC 035 – code of practice for safe use of electricity underwater

ROV

Weight in Air ..... 4,850 kg (10,692 lbs)
Dimensions
- Length ..... 3.5 m (11.6 ft)
- Width ..... 1.9 m (6.3 ft)
- Height ..... 2.1 m (7 ft)

Through-Frame Lift ..... 3,500 kg (7,716 lbs) (in addition to vehicle weight)
Payload Capacity in Seawater (min) ..... 250 kg (551 lbs) (with standard accessories and manipulators installed)

ROV Performance

Power
- Standard ..... 200 shp (150 kW)

Bollard Pull (Minimum)
- Forward ..... 1,110 kgf (2,447 lbf)
- Lateral ..... 1,080 kgf (2,380 lbf)
- Vertical, up ..... 1,050 kgf (2,315 lbf)
- Vertical, down ..... 1,150 kgf (2,535 lbf)

Thrusters
- Horizontal ..... 4 x Sub-Atlantic SA420
- Vertical ..... 3 x Sub-Atlantic SA420

Automatic Control Modes ..... Heading (semi/full)
- Depth
- Altitude
- Attitude (pitch and roll)
- StationKeep™
- AutoTrack™

Flight Control Modes ..... Cruise
- Trim
- Pitch
- Controlled displacement

Operator Interface ..... Dual redundant control stations with touchscreen GUI, joysticks and rate manipulator controller
- 6 x 610-mm (24-inch) HD LCD cisplays
- 3 x 432-mm (17-inch) HD video monitors

ROV Tooling

Isolated HPU ..... 75-hp at 207 bar (3,000 psi)
Manipulator ..... TITAN 4 and ATLAS 7R
- Optional ..... RigMaster five-function grabber

Spare Hydraulic Functions ..... 13-22 (solenoid, proportional and high flow standard)
- Three 8-station hydraulic manifolds, 3-station hydraulic high flow manifold

Auxiliary Hydraulic Circuit
- Standard ..... 71cc (125 LPM) at 207 bar maximum

Proportional High Flow ..... 120 LPM

ROV Sensor / Telemetry – Gigabit Ethernet-Based

Telemetry ..... 1 Gigabit Ethernet-based, software configuration and can support RS-232, RS-485, ethernet and TTL
HDTV Capable ..... Compatible
Digiquartz ..... Standard
RLG (Ring Laser Gyro) ..... Standard
DVL (for dynamic positioning and altitude) ..... Standard
Inertial Navigation System ..... Available
Instrument Power (DC) ..... 3 kW total
HDTV Support ..... Optional
- Lights: 10 x dimmable 120 VAC, 2 x 120 VAC HID circuits
- DC voltages: 24 VDC @ 10 Amps standard, 12 VDC and 48 VDC available
- AC voltage: 3 x 120 VAC @ 2 Amp, 1 x 120 VAC @ 10 Amp
- 12 proportional light ports, 4 LED floods, 6 LED spots and 2 HIDs
- 4 dedicated AC channels for various devices; one is rated up to 20 Amps

Tether Management System

Type ..... Top hat
Depth Rating ..... 4,000 m (13,124 fsw)
Height ..... 2.21 m (7 ft 4 in)
Diameter (max) ..... 2.13 m (7 ft)
Weight in Air ..... 4,600 kg, including full cable capacity
Tether Line Pull ..... 100 kg (220 lbs) minimum
Tether Line Speed ..... 0-75 m/min (246 ft/min), variable speed
Latch Capability ..... 10,000 kg (22,000 lbs)
Tether Capacity ..... 850 m (2,789 ft) standard, 1500 m (4,921 ft) available

Launch and Recovery System

Umbilical ..... Armored, 4,500 m (14,764 ft) standard
Winch ..... Right angle or direct drive
A-Frame ..... Telescoping, 5 m (16.4 ft) reach
U-Frame ..... Standard, 4.5 m (14.8 ft) reach
Heave Compensation ..... Active or passive
Control and Work Container
- Standard ..... 2.4 x 6.1 m (8 x 20 ft)
- Optional ..... 2.4 x 4.9 m (8 x 16 ft)

C-Innovation, LLC
1121 Decker Drive · Mandeville, LA 70471 · (985) 951-7771 · Fax: (985) 951-7701
One Briar Lake Plaza · 2000 W. Sam Houston Parkway S., Suite 1100 · Houston, TX 77042 · (713) 395-4460
www.C-Innovation.com