
all about people!
500 lb Gorilla
Mutual Contractual Agreements
ADG

AOG | AUSTRALASIAN OIL & GAS EXHIBITION & CONFERENCE 22-24 FEB 2017 PERTH CONVENTION EXHIBITION CENTRE

Commerce with, and innovation and implementation of new methods and technology in the global Oil and Gas Sector – is it possible for individuals and SMEs to dance with the proverbial 800 lb gorilla?

Moya Crawford

Deep Tek Limited/
Deep Tek AS

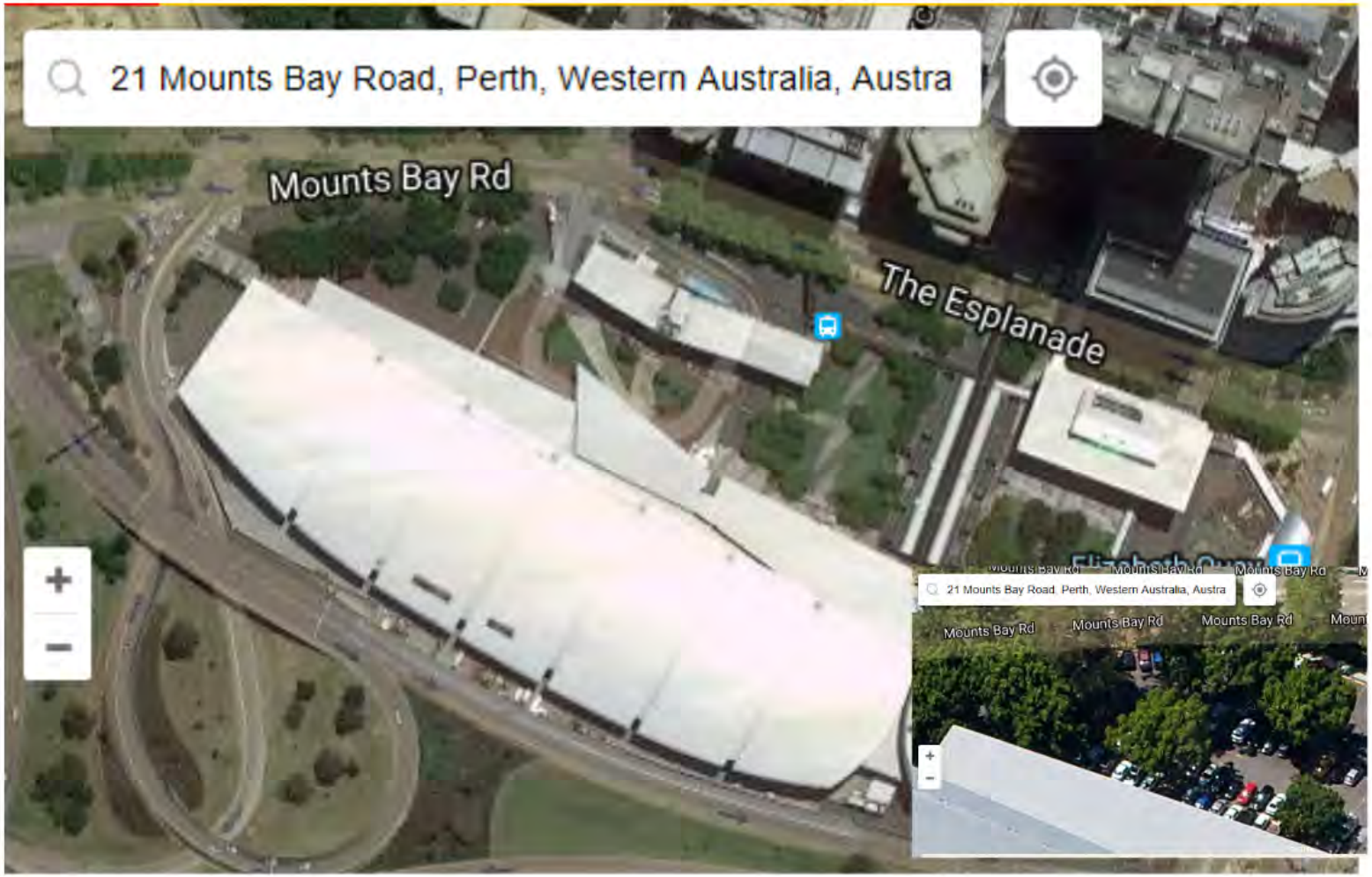
Innovation

This Address is itself an innovation. This is the first time I have used Prezi. This is a risk - I could mess up badly, but in order to cover the breadth of issues it is essential to be able to zoom from the big strategic picture, down to the fine engineering and scientific detail and PowerPoint does not facilitate this .

Google Maps as an Analogue

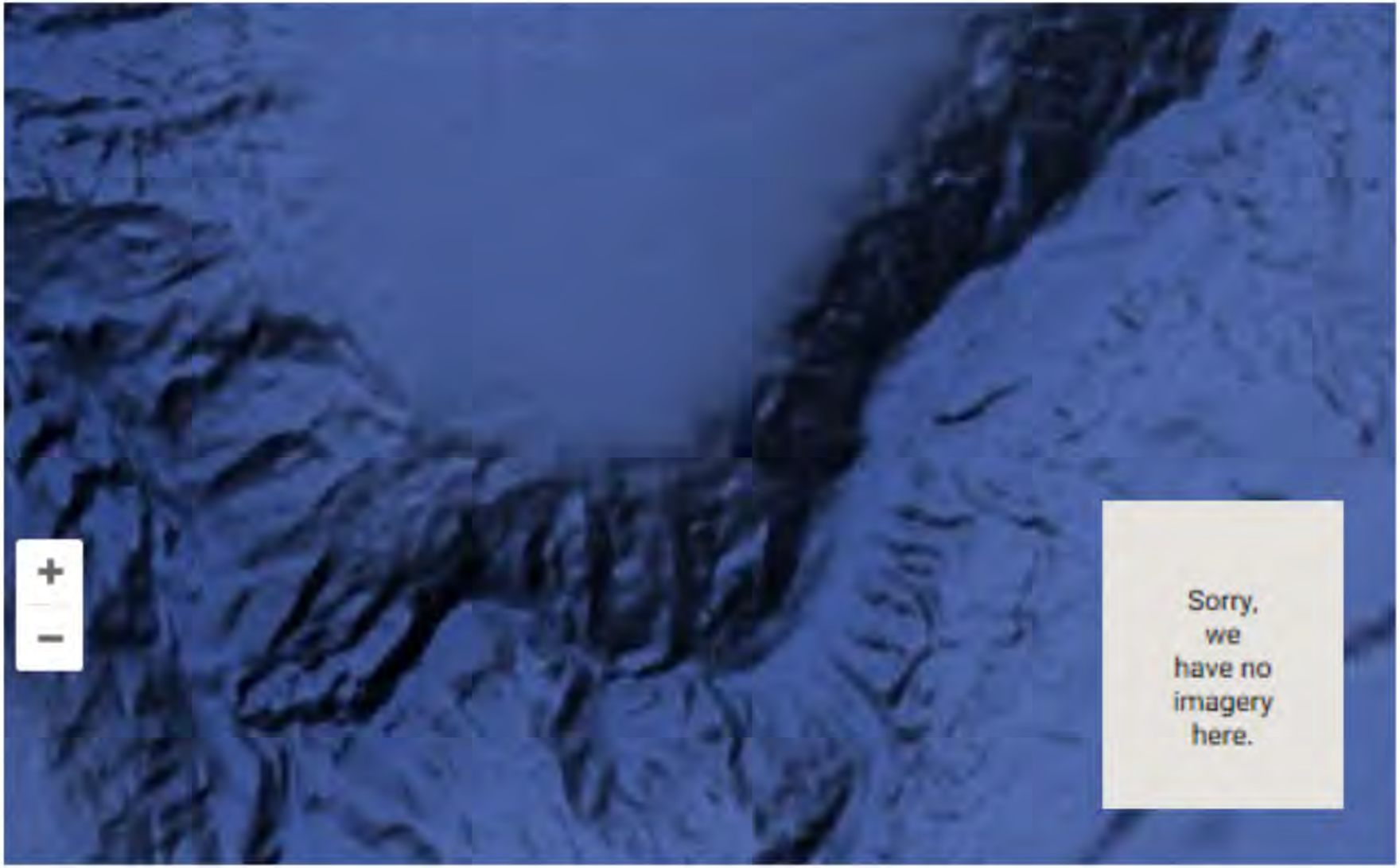
So, in order to communicate effectively, I also have to improve my competence and challenge myself. I also have to establish good reference points, in order to convince others that the benefits are worth it. Google Maps is a good analogue.

Effective Communication



We are zooming in, using a simple to use, but highly sophisticated tool to pin-point exactly where we are using a coordinate system. If anyone in the audience used their mobile phone, they would have exactly the same image with a time stamp - validation! So, we all now have a reliable and shared picture in our heads of where we all are, in real-time. This is a good metaphor for effective communication.

Subsea Challenges

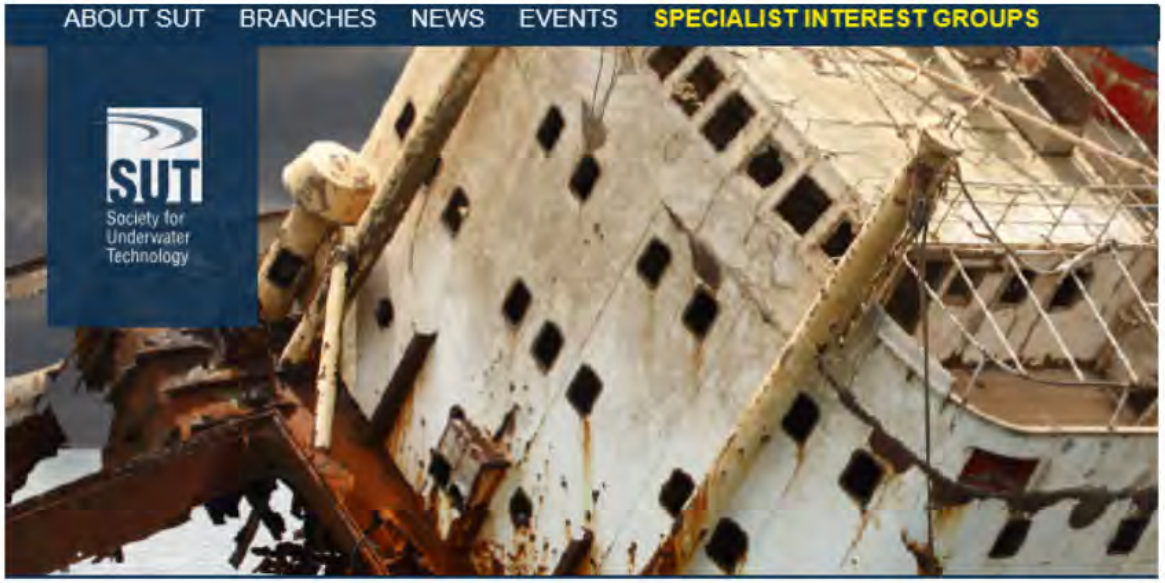


But wait a minute, if we move just a little offshore to the west, suddenly our shared picture becomes blurry and when we zoom in - there is no detail at all. We have no shared picture...However, this is the dynamic, three-dimensional space in which we choose to operate our vessels and subsea infrastructure in order to extract hydrocarbons. We have a challenge on our hands!

United Nations SDGs

Even worse, spearheaded by United Nations and supported by all its member states, sustainable development are being added into the mix, and we need to be able to substantiate our responsibility in order to have a 'social licence to operate'. Did the 800lb gorilla that caricatures global oil and gas just get bigger?

Society for Underwater Technology



Salvage and Decommissioning

ORGANISATION

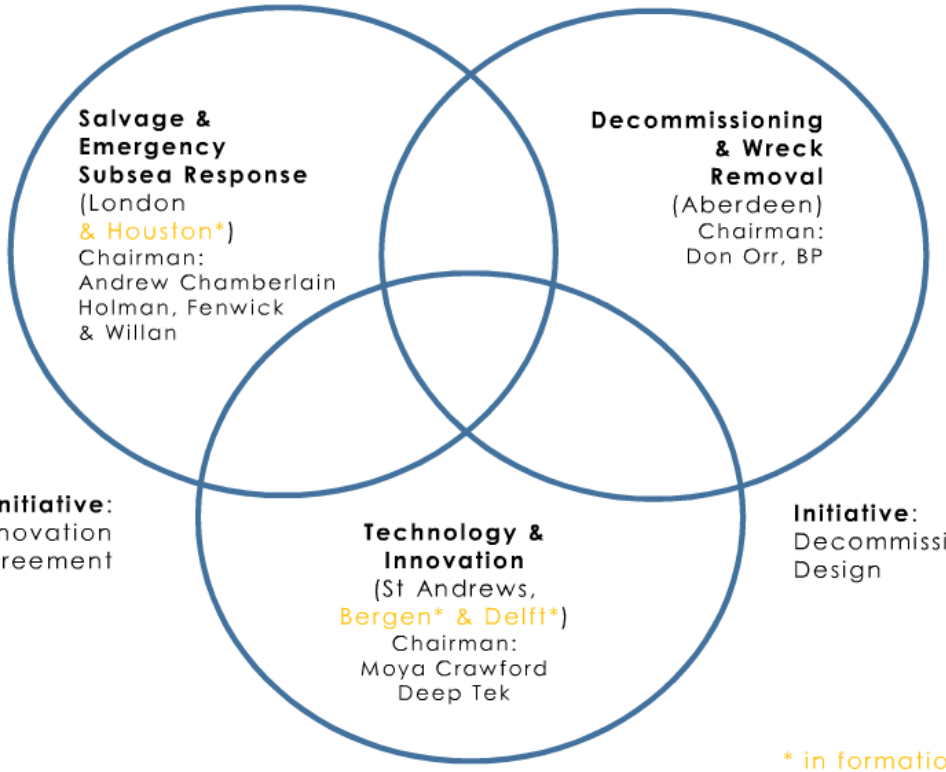
The International Salvage & Decommissioning Committee undertakes its activities using a structured agenda that focuses on three key themes: Life, Property and the Environment.

The answer is probably, yes, but this is the arena in which The Society for Underwater Technology, special interest Group, International Salvage & Decommissioning Committee has chosen to innovate! This Address explains how have gone about this undertaking.

International Salvage & Decommissioning Committee

Initiative:
Oil & Gas and Salvage Synergies BIMCO Dismantling Agreement

Initiative:
'LOF Offshore'



Initiative:
Recycling/reuse of mattresses onshore

Initiative:
BIMCO Innovation Agreement

Initiative:
Decommissioning in Design

* in formation

Initiative:
Virtual Prototyping and Simulation

all about people!

Composition:
Including, but not limited to:
Oil & Gas Operators, Salvors, Lawyers, Insurers/P&I Clubs/ Marine Scientists/Manufacturers/ MoD, DNV GL, International Salvage Union, American Salvage Association, Decom North Sea

Salvage - and why 'LOF Offshore' is an important initiative, as every second counts

"Thunder Horse" – mechanical failure - GoM 2005

"Deepwater Horizon" – well blow out – GoM 2010

"Kulluk" – aground - Alaska 2012

"Troll Solution" – punch through – GoM 2015

Challenges of Wreck Removal and parallels with Decommissioning

West Atlas, Australia (2009)

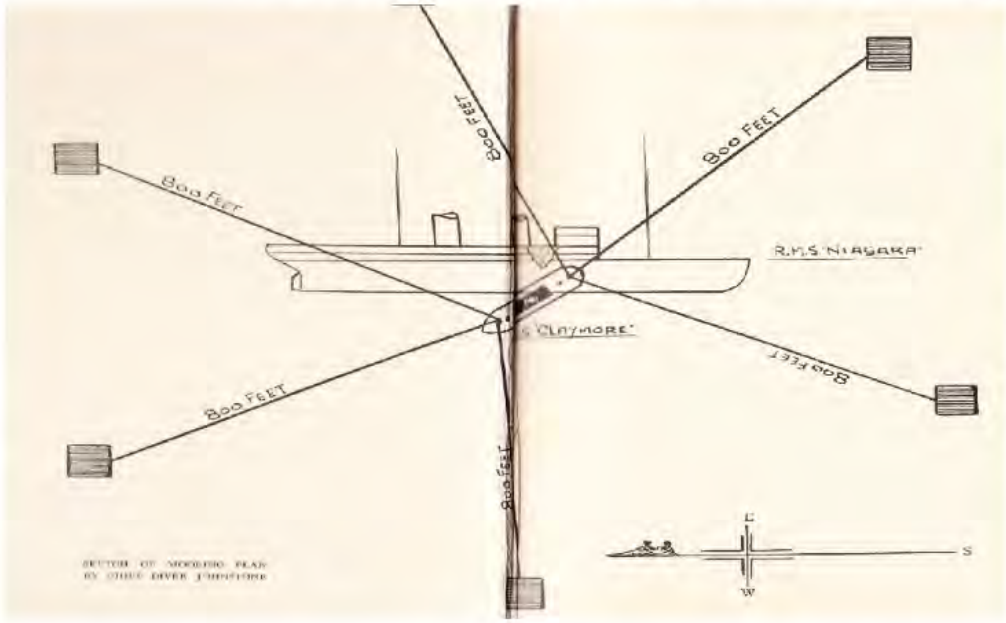
Industry Report:

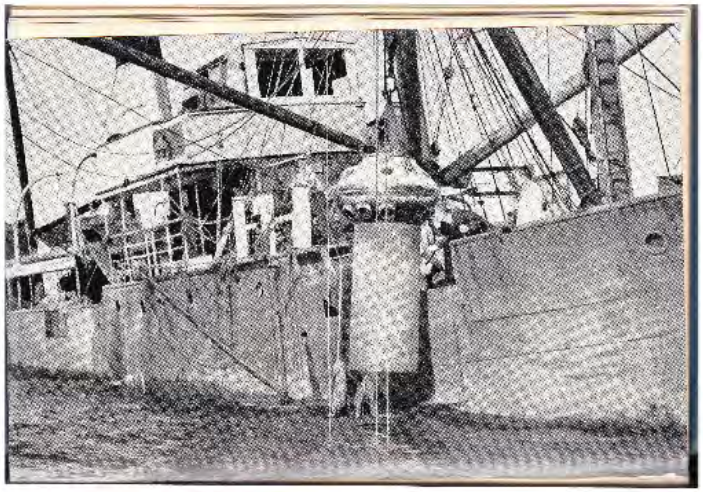
'Gard News examines a serious gas well blowout, involving one of the largest jack-up drilling rigs in the world, from three different perspectives: that of the claims executive who handled the claim on behalf of Gard, that of the lawyers who had to navigate through a complete legal framework, and that of the wreck removal specialist who skilfully steered the process through a maze of regulatory and statutory challenges.'

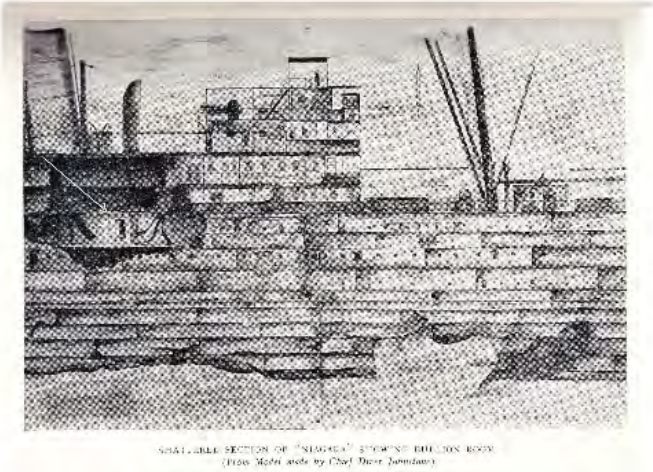
Costa Concordia, Italy (2012)

Rena, New Zealand (2011)

Salvage Subsea: Cargo Recovery and parallels with Decommissioning and Emergency Subsea Response







Salvage of the Niagara's Gold, by Captain John Williams of United Salvage Pty. Ltd. (1941/42). Method remained unchanged until early 1980's.

Tripling the World Depth Record (1993)

Last lifting that we did using steel wire rope as the flexible tension member!

Copper Cathodes being landed on deck from the François Vieljeux, a wreck lying in 1250 metres of water, 45 miles south- west of Cape Finesterre (rough environmental exposure) using Deep Tek designed handling equipment with one single hoist umbilical (power, signals and lifting).

deep tek

3000 metres water depth 2002

LIFT, POWER & CONSTANT SIGNALS SUPPLIED TO 3000M, USING A DP1, VOO. ONLY POSSIBLE DUE TO PRINCIPLES-BASED INNOVATION AND THE WINDER SYSTEMS' MINIMAL WEIGHT & FOOTPRINT.

ss Persia

We had to make the change to synthetic filament rope and vessel of opportunity, if we wished to continue our specialist discipline of cargo recovery. All work was carried out on 'No Cure/ No Pay'!

deep tek

Technology Transfer to Light Well Intervention

Expro AX-S System:

85t/500kW/3000m

As main contractor Deep Tek delivered:

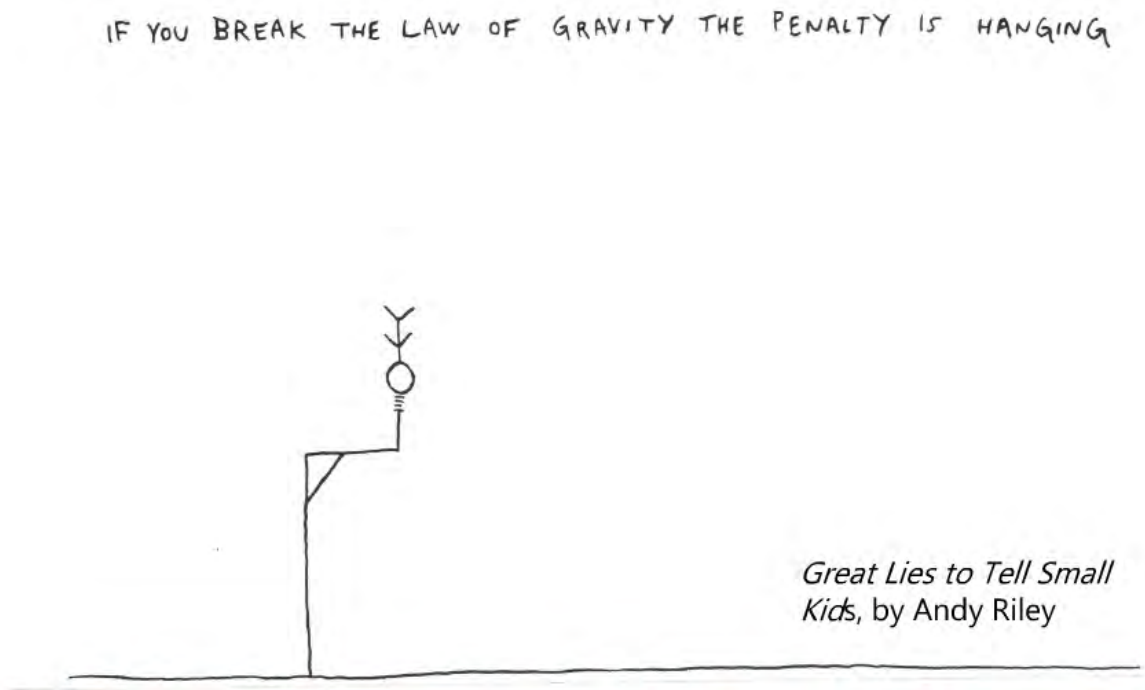
- Soft Rope Winch
- Winder
- Tower
- Skid system

In addition to the delivery of hardware, Deep Tek entered into a licence fee contract with Expro AX-S for 1M$/year for use of the Winder.

More about People themselves, than the Technology they help create...

deep tek

The 'Elephant in the Room'? – the Implementation of Innovation



Great Lies to Tell Small Kids, by Andy Riley

The Laws of Physics are the only laws we CANNOT break!

All other laws are codes of conduct that we make up for ourselves and can transgress and/or question, as long as we are prepared to pay the consequences.

As far as profiting from the benefits of new technology is concerned - innovating to a standard is a mutually exclusive proposition - but how do we implement change in the ultra conservative oil & gas sector?

deep tek

DNV GL ST E407

principles-based standard


DNV-GL

STANDARD

DNVGL-ST-E407 Edition March 2018

Rope based deployment and recovery systems for designated service

DNV GL AS

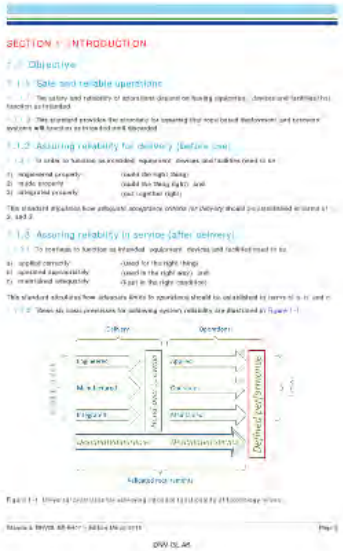
requirements validation

DNV GL AS

claim/argument/evidence

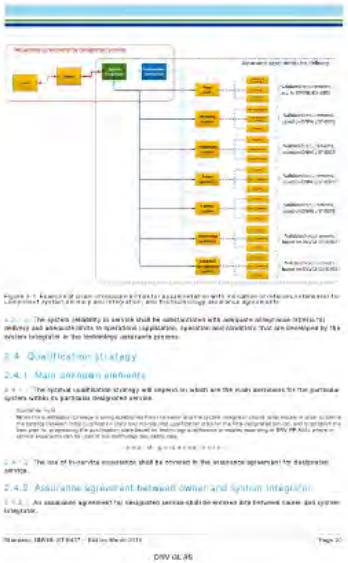
DNV GL AS

assuring reliability in service



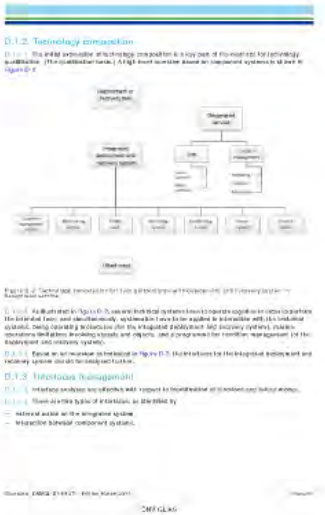
DNV GL AS

role responsibilities



DNV GL AS

technology composition analysis



DNV GL AS

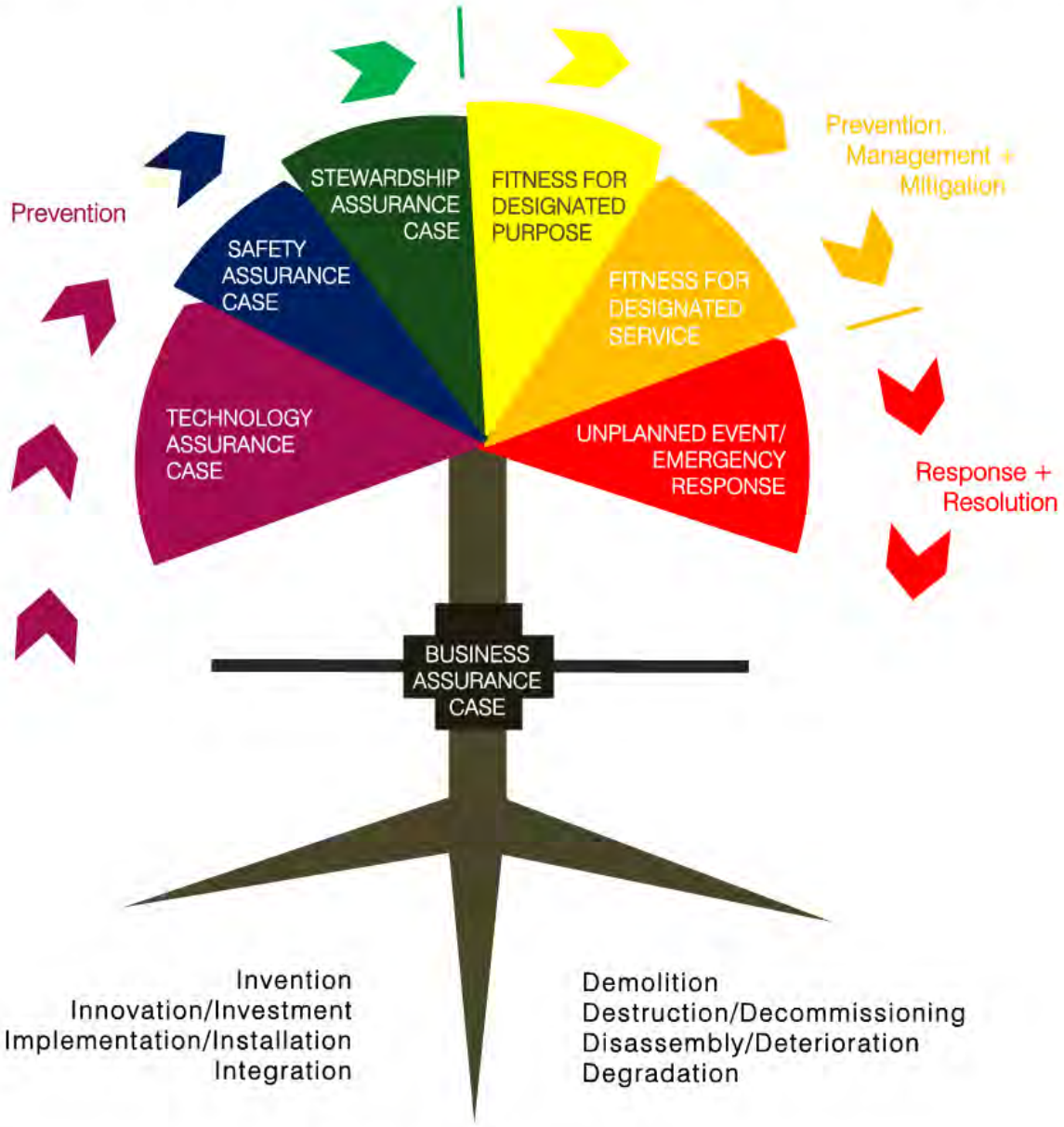
acceptance criteria and limitation

DNV GL AS

critical parameters

DNV GL AS

Sustainability Tree - a Holistic. lifeTIME Approach



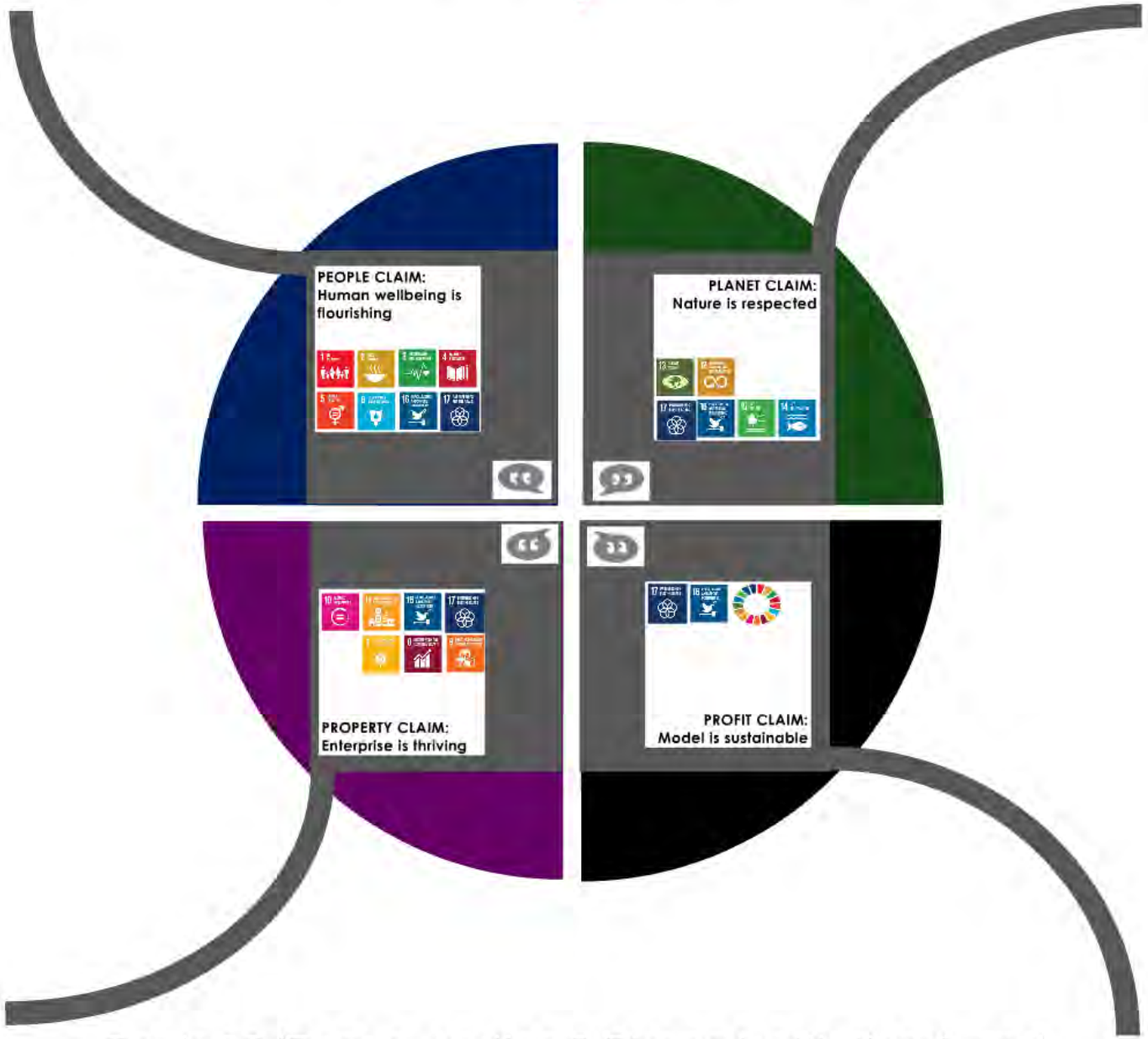
UNDERSTANDING

Sustainable Wealth Creation and 3p/pt

Holistic, lifeTIME approach
to Wealth Creation:

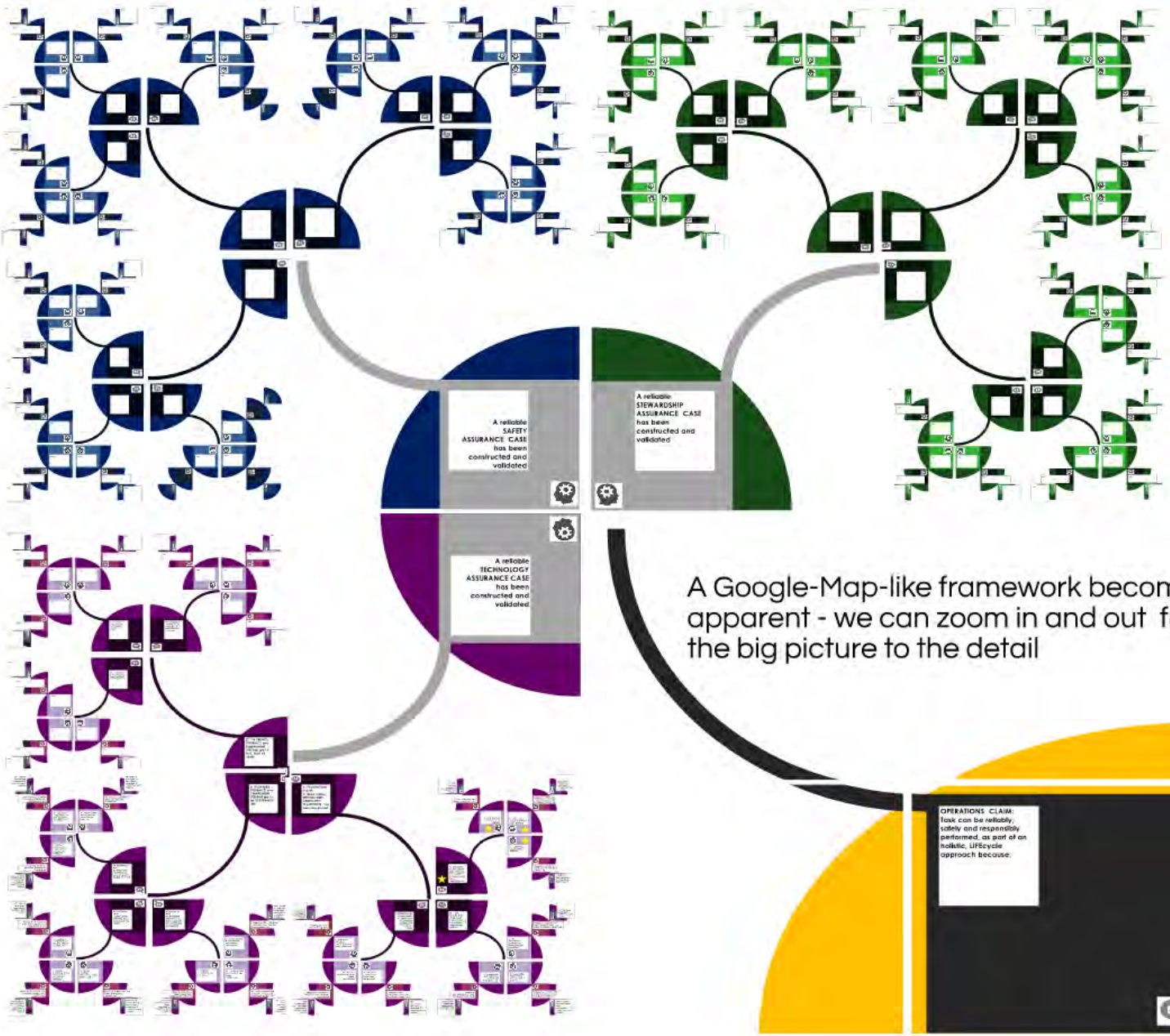
Optimal Allocation of Time and Effort for each of the Assurance Cases in order to achieve Sustainable Profit. The hypothesis being that if one gets all the underlying work completed satisfactrily, money essentially looks after itself

United Nations Sustainability Goals embedded in each of the Assurance Cases



Goals 16 (Peace, Justice & Strong Institutions) and 17 (Partnerships) appear in all 4 Assurance Cases

Argument Patterns Emerge for each of the Assurance Cases



A Google-Map-like framework becomes apparent - we can zoom in and out from the big picture to the detail

Innovation: Patterns of Argument shown as Fractals

New Zealand's Silver Fern - classic example of a fractal pattern found in nature

A fractal is a never ending pattern that repeats itself at difference scales.

A key benefits of using showing Patterns of Argument as fractals (as opposed to using a more random systems such as KOAS or Goal Structured Notation, is that even non-expert can tell when a CLAIM/ARGUMENT/EVIDENCE element is missing.

Communication Issues

MURGITROYD

INNOVATION SPOKEN HERE

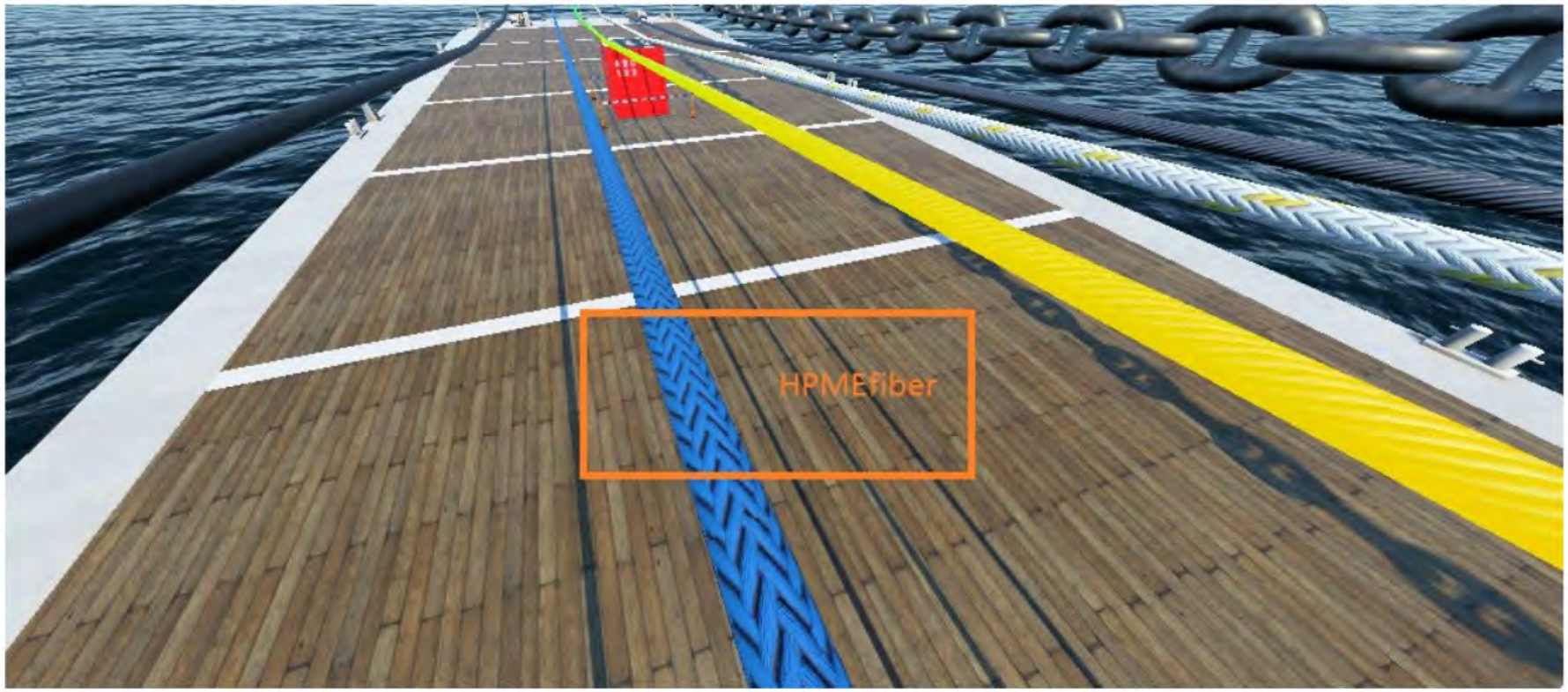
Innovation is not an isolated activity, it is a way of thinking; one that is not common to all - be prepared for some blank stares!

Benefit of Simulation for Virtual Prototyping

OSC Simulator at Aalesund, Norway (provides software for Farstad Simulator in Perth)

This highlights the first of many benefits of Simulation in the Innovation Process. Firstly, it is a most effective form of communication; just like Google Maps, it transports the individual regardless of technical discipline , and importantly, it empowers the practical person, who will be implementing and/or operating the technology.

Principles-Based Physics Engine



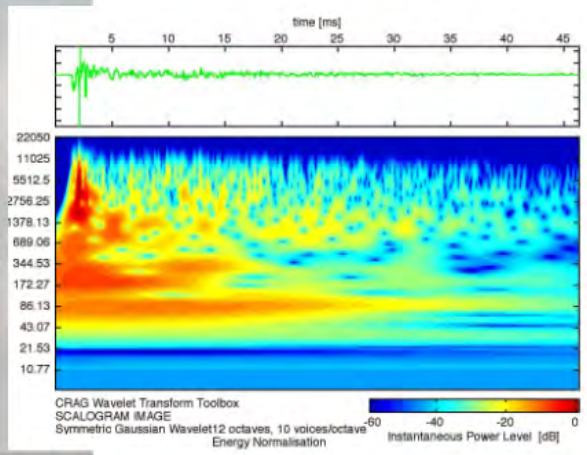
Even better - is not just 'visualisation', it provides quantifiable data, using a principles based physics engine, so that rapid prototyping can be undertaken, that builds in the effect of wind, wave and current, without having to go to sea. This is a liberation.

The above image shows various 'flexible tension members', all of which will perform the function, 'position mass'.

Demonstrating HMPE in a Knuckle Boom Crane

Data logged in each one metre section of rope at one second intervals. Possible to prove that the dynamic forces on the crane is the limiting factor in use - not fatigue endurance of the rope. This UNDERSTANDING drives the engineering design and cuts the Technology Qualification costs - as unnecessary testing is removed.

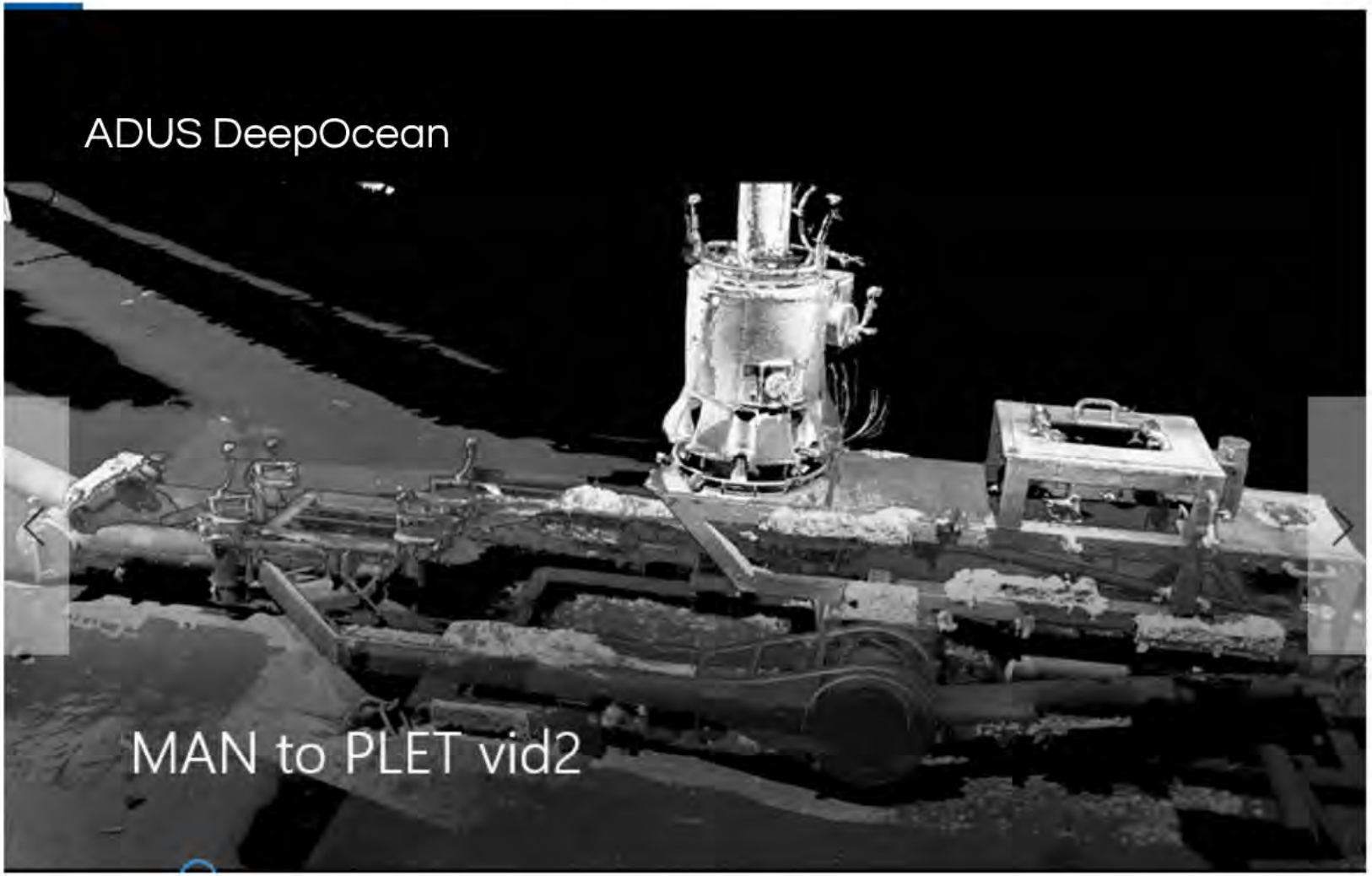
Active Hybrid Position-Keeping



Underwater noise of thrusters will be added to the simulation

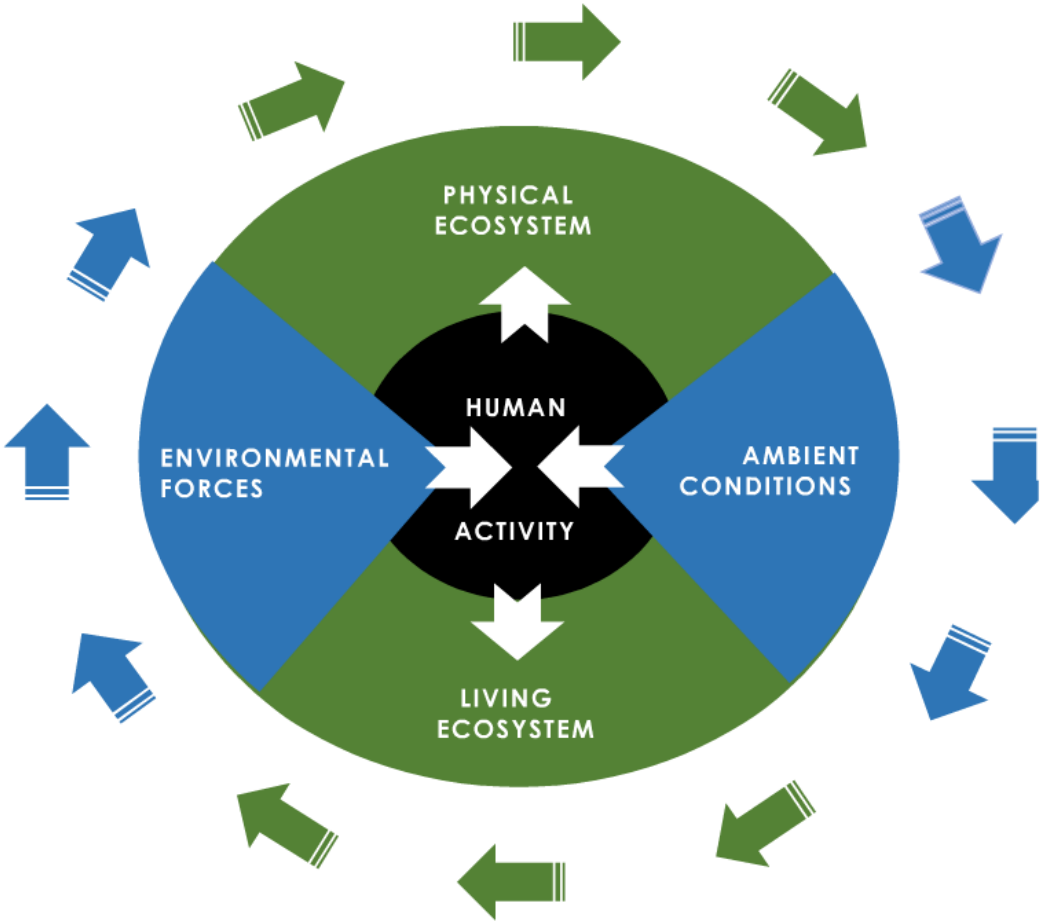
Aim to substantially reduce running cost, and CO_2 and noise emission

Importing 3D Data



High quality, spatially accurate, dynamically acquired 3D data is also being introduced, in order to extend the simulation subsea, and feed into simplified design, decommissioning in design, and planning for decommissioning (amongst other initiatives). The plan is that hyper-spectral camera images will also be introduced.

Interaction between Environmental Forces, Ambient Conditions, Ecosystems and Human Activity -



Then engineers, scientists and other interested parties will really begin to be able to share the same dynamic picture of the complex interactions at play.

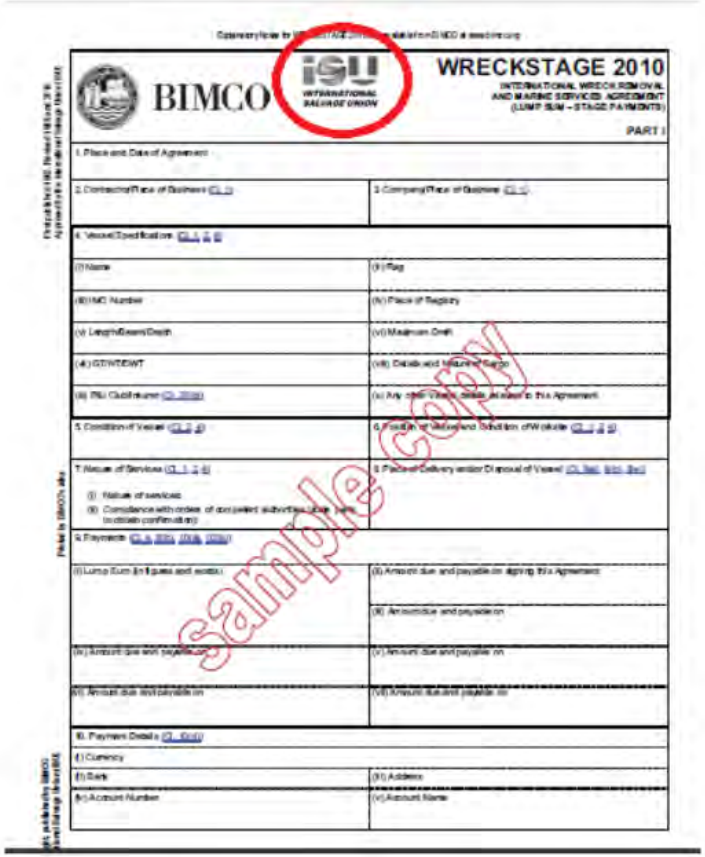
Framework for Data
(as the IT Platform for Remote Command and Control)

800 lb Gorilla

So - is it possible for individual and SMEs to have commerce with, innovate and implement new methods and technology into the global oil and gas sector?

Not without an improved framework for conducting business, and an increase in the speed and ease with which new methods and technology can be implemented.

Mutual Contractual Agreements



BIMCO

ISU INTERNATIONAL SALVAGE UNION

WRECKSTAGE 2010

INTERNATIONAL WRECK REMOVAL AND MARINE SERVICES AGREEMENT (LUMP SUM – STAGE PAYMENTS)

PART I

1. Place and Date of Agreement

2. Contractor/Place of Business (Cl. 1)

3. Company/Place of Business (Cl. 1)

4. Vessel's Specification (Cl. 1, 2, 6)

(i) Name

(ii) Flag

(iii) IMO Number

(iv) Place of Registry

(v) Length/Beam/Depth

(vi) Maximum Draft

(vii) GT/NT/DWT

(viii) Details and Nature of Cargo

(ix) P&I Club/Insurer (Cl. 10(b))

(x) Any other Vessels details relevant to this Agreement

5. Condition of Vessel (Cl. 2, 6)

6. Position of Vessel and Condition of Wreck/site (Cl. 1, 2, 6)

7. Nature of Services (Cl. 1, 2, 6)

(i) Nature of services

(ii) Compliance with orders of any relevant authorities (state name, to obtain confirmation)

8. Place of Delivery and/or Disposal of Vessel (Cl. 5(a), 6(b), (c))

9. Payments (Cl. 4, 6(b), (c), 7(b), (c))

(i) Lump Sum (in figures and words)

(ii) Amount due and payable on signing this Agreement

(iii) Amount due and payable on

(iv) Amount due and payable on

(v) Amount due and payable on

(vi) Amount due and payable on

(vii) Amount due and payable on

10. Payment Details (Cl. 4(a)(i))

(i) Currency

(ii) Bank

(iii) Address

(iv) Account Number

(v) Account Name

Mutual Contractual Agreements are in alignment with the United Nations Sustainable Development Goals

Much of the answer lies in simple, mutually beneficial contractual agreements, that fairly balance risk and reward, such as the BIMCO Agreements:

~ there is work in progress for a BIMCO Dismantling Agreement for the removal of man-made structures. This needs the input of progressive oil and gas operators. Perhaps one good candidate would be Woodside? Another perhaps is Statoil?

- The first pass of an Technology Innovation and Implementation Agreement based on Wreckstage 2010 has also been drafted, and this will be steered through the SUT, Salvage & Decommissioning Committee.

AOG

SUT/MASTS Workshop Agenda

Technology & Innovation Centre, Glasgow
20th (pm) & 21st (am) October 2016

Thank you to our sponsors
mwaves cwaves
INVEST IN FIFE
MASTS OE and Gas Forum

Decommissioning & Wreck Removal:
Influence, educate and un-lock potential - Bringing industry and science together

THURSDAY, 20th- 13:30-17:30

OPEN
Welcome: Karen Seath, General Manager Decom North Sea / Co-chair SUT Decom & Wreck Removal Workgroup
Setting the Scene: Moya Crawford, Chair, SUT International Salvage & Decommissioning Committee

SESSION ONE 13:50
Chair: Ben Browne, Partner, Thomas Cooper LLP

Legal, Governance and Regulatory Frameworks
Jim Christie, Oil & Gas Authority: Defining decommissioning delivery
Ben Browne, Thomas Cooper LLP: Understanding wreck removal contracts
Mike Elliott, University of Hull: The repercussions of marine structure decommissioning in integrated governance
Colin Howes, DNV GL: Effective management of hazards through process and efficient marine governance
Tina Hunter, University of Aberdeen: Decommissioning governance in emerging environmentally challenging jurisdictions

COFFEE & NETWORKING 15:30

SESSION TWO 16:00
Chair: Mike Elliott, Director, Institute of Estuarine & Coastal Studies, University of Hull

Socio-economic and Cultural
Tom Baxter, Oil & Gas Consultant: Decommissioning - The sustainability challenge
Elisabeth Wilson, Tinne Consultants: Seasteading as a concept for reuse
Cheryl Robb, Zero Waste Scotland: The benefits of a Circular Economy approach during decommissioning
Alistair Niewenhuyse, Reflex Subsea: Why chop it up when we can reuse it

Speaker and Delegate Q&A/ Open Discussion
Chairman's Closing Remarks: Mike Elliott

CLOSE 17:30
17:30- 18:30
Networking drinks reception

FRIDAY, 21st- 08:45-12:45

OPEN
Welcome: Don Orr, Decommissioning Assurance Manager, BP GPO/ Co-Chair SUT Decom & Wreck Removal Workgroup
Chair: Don Orr (as above)

SESSION THREE 9:05
Enabling Technology
Alan Edwards, Bibby Offshore: Subsea decommissioning - Challenges and learnings
Stuart Martin, Ardent Global: A salvors approach to decom
John Gillies, Shell: Brent Delta Gravity base cell survey and remediation
Michael Kurdve, SSE-AB: Decommissioning of YTTRE STENGRUND, one of the first Offshore Wind Farms

Speaker and Delegate Q&A/ Open Discussion

COFFEE & NETWORKING 10:30

SESSION FOUR 10:45
Chair: David Paterson, Executive Director, Marine Alliance for Science and Technology for Scotland (MASTS)
Science for Decom
Sally Roisse, SAMS Marine Scotland: Pipeline decommissioning: Generating an evidence base for comparative assessments
Teresa Dunn, Marathon Oil: Practical application of NEBA in the decommissioning world
Andrew Guerin, University of Newcastle: Utility and limitations of structural survey footage for evaluating marine assemblages on offshore structures
Afolabi Akinyemi, Heriot Watt University: Data integration support for offshore decom waste management
Flash presentations:
Roxana Suhring, Cefas: A standardised approach to undertaking environmental risk based assessments of shipwrecks
Kate Gormley, University of Aberdeen: Automated ROV analysis of marine growth footage

Speaker and Delegate Q&A/ Open Discussion
Chairman's Closing Remarks: David Paterson

CLOSE 12:45
Lunch is available

INSTALLATIONS | WELLS | INNOVATION & TECHNOLOGY | WORKFORCE ENGAGEMENT

DECOM North Sea

Focus to date has been on North East Altantic and North Sea as regional seas, with increasing engagement with Gulf of Mexico.

Question - is there a desire for beginning interaction in Australia and if so, how might this be best achieved?