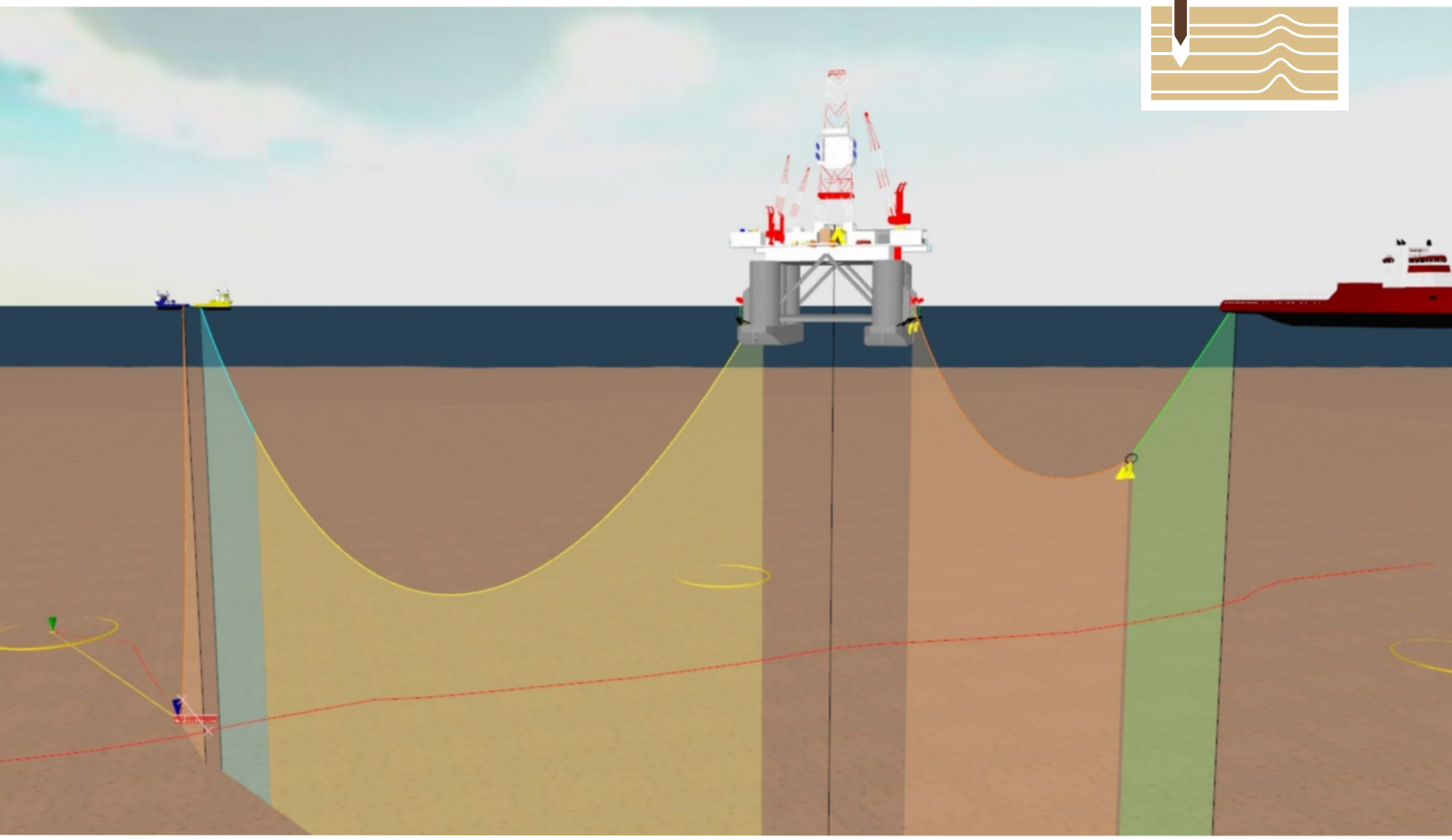


# FUGRO
# DEEPCAT

**A safe and accurate 3D Real Time mooring visualization system used to moor drilling rigs, mooring lines, AHVs, ROVs etc. DeepCat uses a continuous physics model to achieve a low risk deployment with a permanent 3D record of the entire operation.**

## OVERVIEW

DeepCat offers users and insurers confidence that risk is being proactively and effectively minimised during rig deployment and operations. During planning stages potential obstacles and hazards can be identified. It can be used as an aid to safely and efficiently assist a project during development and life-of-field planning. As a result, and for the first time, your real-time analysis can take into account the cause and effect of earlier events in the deployment process. With a continuous calculation engine, and the ability to model mud-loops, drags and snags, you can predict near misses before they happen and can therefore prevent damage to high value subsea assets.

## WHAT'S NEW ABOUT THIS?

The core of the solution is a continuous dynamic solution that uses a real physics engine to calculate forces and positions across the whole system, fifty times a second.

Until nowall mooring systems have relied on multiple static solutions, which give sequential snapshots of a single solution. By contrast, DeepCat's dynamic solution shows how situations evolve over time, taking into account all events that led up to the current status.
By integrating this with Fugro's state-of-the-art Starfix. NG positioning and navigation system, we give a single point of control for all the important data flows during your rig move operation.

The run time locations of all the significant assets are fed into our system to deliver useful and easy-to-understand information.

At any point, our Fugro survey personnel can configure and present appropriate operational views and data to the right person on board. This could be rudder collision alarms for the AHV captain, or a seabed asset proximity alarm to all parties.

## SET-UP AND PLAN

All the features of DeepCat are configured through our established Starfix. NG user interface. This allows easy set-up or import of asset data including:

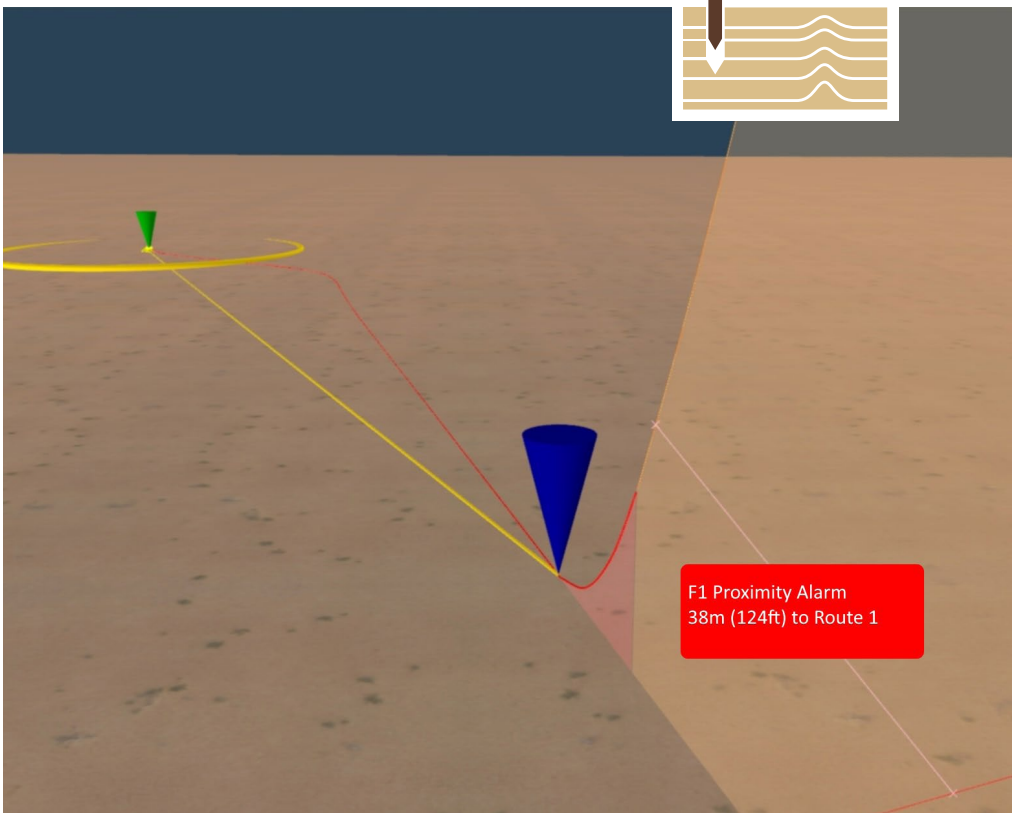
- Length, mass, buoyancy and stiffness of chains and lines
- All data and offsets from AHVs and rig
- Included floats or alternate line sections
- Pre-laid or pre-installed lines

Using live positional feeds from the vessels and rig, together with line payout data, the locations of lines in the field are continuously calculated as they evolve:

- Separations between critical assets and lines and anchors are monitored in real time and alarms set to alert the operators at critical thresholds
- Tensions and positions are continuously calculated and displayed
- Handovers between different sections of the operation are continuous and simple

## PRE-TENSIONING

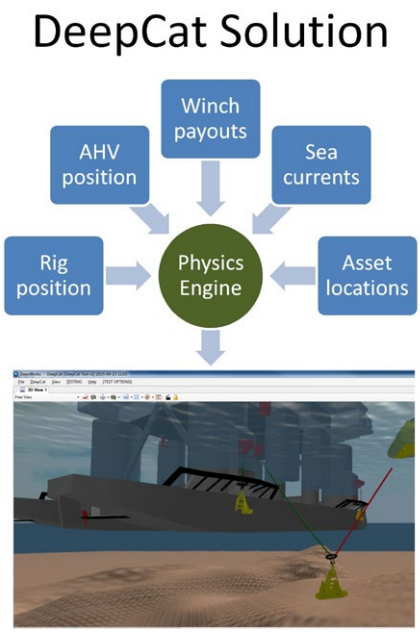
DeepCat allows final anchor positions to be calculated following a pre-tensioning operation where good tension data is available. It does this by modelling the final location of the anchor based on the length and tension in the line.




*Detailed view Mud-loop.*

## MAJOR FEATURES OF DEEPCAT:

- Displays and tracks complex objects — rigs, mooring lines, AHVs, ROVs, etc. in real time
- Support of true seafloor definition, along with seafloor assets
- Multiple cameras and views, allowing the operator to present simultaneous views of the rig move with the option of each, showing the scene from any desired vantage point
- Ability to fly virtual cameras and attach cameras relative to moving or static objects (i.e. view a mooring line from the vantage point of a wellhead)
- Shows proposed and current estimates of mooring lines
- Simulation of touchdowns, tensions, etc.
- Advanced calculations of mooring touchdown point in the event of line failure during mooring operations




*DeepCat solution.*



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